

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Framingham, Mass. and additional mailing offices ©1983 by CW Communications/Inc.

Vol. XVII, No. 4

January 24, 1983

Vol. XVII, No. 4

Apple, NCR Heat Up Micro Action

•Apple: Into the Office •NCR: Into the Fray

By Jeffrey Beeler

CW West Coast Bureau

CUPERTINO, Calif. — Apple Computer, Inc. last week plunged headfirst into the office systems arena with the introduction of a 16-bit microcomputer that reportedly allows users to run several applications simultaneously.

Apple's long-awaited Lisa system made its formal debut during the company's annual shareholders meeting, where the firm also announced the Apple IIE, an enhanced version of its existing Apple II (story on Page 10).

Lisa, aimed at business professionals and corporate executives, comes with six integrated application software packages that reside together in a 5M-byte hard disk system, Apple said. The software packages include:

- Lisa-Calc, an electronic spreadsheet.
- Lisa-Write, a word processing program.
- Lisa-Graph, which allows spreadsheet data to be converted into bar, line, pie and other charts.
- Lisa-Draw, which allows users to prepare presentation graphics and to produce line drawings, schematics and other visual aids.
- Lisa-List, a data base facility.
- Lisa-Project, which aids in project management, scheduling and modeling.

(Continued on Page 10)

By Ed Scannell

CW Staff

SAN FRANCISCO — NCR Corp. became another prospector in the personal computer gold rush last week when it took the wraps off its first two low-cost microcomputers as well as a local-area network that links the systems with the IBM Personal Computer and Apple Computer, Inc.'s Apple II. All products are scheduled for June delivery.

Intended for business-oriented applications, the two systems that make up NCR's new Decision Mate V series include an 8-bit, Zilog, Inc. Z80A-based system and an 8/16-bit, Z80A- and Intel Corp. 8088-based system. Both run under the Digital Research, Inc. CP/M and Microsoft, Inc. MS-DOS operating systems. The systems are compatible with several higher level languages, including Cobol and Pascal.

A unique feature of the two Decision Mate systems, NCR claimed, is the ability to add peripherals without opening the cabinet. A spokesman said external plugs permit users to add subsystems, including a diagnostic module that locates faults, to the units' backplanes.

At \$2,800, the 8-bit system's basic configuration consists of two 512K-byte floppy disk drives, 64K bytes of main memory, a 12-in. CRT, detachable keyboard with 20 programmable function keys, an operating system and a bit-map graphics subsystem that contains its own processor and memory.

The 8/16-bit computer, which carries a \$3,340 price tag, has the same basic configuration as the 8-bit system with the addition of the 8088 chip.

(Continued on Page 6)

DEC Running Into Problems?

By Jim Bartimo

CW Staff

Digital Equipment Corp. has begun to ship its much-heralded Professional line of personal computers, announced last May, but end users should not necessarily expect immediate software delivery.

According to industry sources, DEC is running into trouble delivering a spreadsheet package and an adequate word processing package.

However, a spokesman at DEC's headquarters in Maynard, Mass., said Visicorp's Visicalc spreadsheet package will be available in March and a full-capability WP package has been

(Continued on Page 7)

Wide World Photos

Miami Dolphins fullback Woody Bennett (34 in photo above) and Washington Redskins running back John Riggins (44 below) plow through their opponents' defenses in recent games. Bud Goode and his computer think both teams are charging toward a confrontation at this month's Super Bowl. Story on Page 8.



American Bell Unwraps Digital PBX

By Bruce Hoard

CW Staff

NEW YORK — Saying "let there be no doubt about it, we in AIS are off and running," Archie J. McGill, president of American Bell, Inc.'s Advanced Information Systems division, finally took the wraps off American Bell's digital private branch exchange here last week.

Besides unveiling the Dimension

AIS/System 85, the new company's first significant commercial product offering, American Bell also introduced a series of AIS/System 85-compatible terminals.

McGill described the 300- to 900-line, 19.2K bit/sec digital PBX as "an integrated systems package." The primary users of System 85, which features voice, data, office and building management applications, are ex-

pected to be medium-size to large organizations.

McGill noted that System 85 is an enhanced version of earlier Dimension models with several digital features not found in its forerunners, which offered analog-only transmission. The Dimension line was introduced in 1975; since then, more than 40,000 units have been shipped.

Robert Casale, AIS group vice-president, stressed the compatibility of System 85 with those models. "System 85 was developed to dovetail with the Dimension PBX, not replace it," he declared, adding that American Bell will continue to market and manufacture analog PBXs.

The System 85 building and office management capabilities are also available on other Dimension models, McGill added.

Available by "midyear" on a lease-only basis, the PBX, which has also been known as "Antelope," runs over twisted-pair wiring at potential speeds up to 64K bit/sec, he said.

An "average" 600-line configuration will cost \$12,500/mo on a lease basis; "with all the bells and whistles," that same configuration would cost around \$15,000/mo, according

(Continued on Page 4)

IBM Again Enticing 3080 Users To Buy Rather Than Lease CPUs

By Susan Blakeney

CW Staff

IBM has devised yet another plan to encourage lessees of its 3080 series of mainframes and related hardware to buy its equipment.

Effective April 1, the purchase option percentages of the high-end 3081, 3083 and 3084 mainframes, the 3082 controller, the 3087 coolant distribution unit and the 3089 power unit will drop from the present 40% to 20%, prodding lessees either to buy before the April deadline or consequently to take longer to reach the maximum accrual percentage.

The percentage drop means that lessees of the 8M-byte 3083 processor — at the low end of the 3080 spectrum — will lose approximately \$9,350/mo in accrual dollars, according to Jack Hart, an industry analyst with International Data Corp. in Framingham, Mass.

At the high end, lessees of the 32M-byte 3081K processor will lose roughly \$36,000/mo toward the machine's purchase, he said.

The maximum accrual that lessees can apply toward a purchase is 50% of a machine's price, he added.

(Continued on Page 10)



CW Illustration

Computer-generated brain 'maps' may someday provide researchers with ways to help people with multiple personalities like Natasha, a woman with 127 personalities. Story on Page 14.

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

TM reg. U.S. Pat. Off.

Editor John C. Whitmarsh
Managing Editor Rita Shoor
News Editor Cheryl M. Gelb
Technical Editor Timothy J. Scannell
Senior Editors:
Features Catherine Marengi
Software Lois Paul
Communications Phil Hirsch
Systems Bruce Hoard
Office Automation Ed Scannell
Industry Bruce Hoard
Special Projects Bill Laberis
Writer/Analysts: Marguerite Zientara
Tom Henkel
Senior Writer: Jim Bartimo
Staff Writers: Paul Gillin
Patricia Keefe
Staff Writer/Photographer: Susan Blakeney
Contributors:
New York Bob Johnson
Washington, D.C. Jake Kirchner
West Coast Robert Batt
Jeffrey Beeler
Features Coordinator: Barbara Van Scoyoc
Chief Copy Editor: Donovan White
Assistant Chief Copy Editor: Kathie Gow
Copy Editors: Dave Bouffard
George Cohen
Patti Hartigan
Rick LePage
Betsy Morse
Deborah Scaduto
Editorial Assistants: Nancy Pinks
June Fetting
Contributors:
Education J. Daniel Couger
Human Connection Jack Stone
Lecht on Science Charles P. Lecht
SPECIAL PUBLICATIONS
Computerworld Extra!
Editor Jack B. Rochester
Computerworld OA
Editor Ann Dooley
Copy Editor Nancy Fleming
Computerworld Buyer's Guides
Editor Marcia Blumenthal

Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES & SALES OFFICES:

New York: Suite 7G, 401 East 80th St., New York, N.Y. 10021. Phone: (212) 570-2135.

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064.

Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Bill Dunlop, Stephen Thomas, Beebe Hobson Assoc., 345 Goswell Rd., Islington, London EC1V 3HN. Phone: 01273 341516.

W. Germany: Eckhard Updehl, CW Publikationen, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 34-90-61. Telex: 5213350.

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720 85 66.

Japan: Mr. Shobei Kunita, Computerworld Japan, 1-19-7 Shuonji, Chuo-ku, Tokyo 104. Phone: (03) 551-3802. Telex: 252-4217. Eitehan H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jinbo-cho, Chiyoda-ku, Tokyo 100. Phone: (03) 320-4178. Telex: 128666.

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crows Nest, NSW 2065. Phone: (02) 4395113. Telex: SECCO-A-25468.

Brazil: Eric Hippesley, Data News, Computerworld do Brasil, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor 20031 Rio de Janeiro, RJ. Phone: (021) 240-8225. Telex: 213083WORLD BR.

Mexico: Richard Small, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-4218. (905) 514-5309.

Spain: Neil Kelley, Computerworld/Espana, Gravia, 13, Madrid 4. Phone: 231-23-85, 231-23-86, 231-23-88. Telex: c/o IDC, 66140 Y Madrid.

Denmark: Preben Engell, Computerworld/Denmark, Gammel Strand 90, 1202 Copenhagen K. Phone: 01-1234-11. Telex: 27566 cordan.

Second-class postage paid at Framingham, Mass., and additional mailing offices. Postmaster: Computerworld (ISSN: 0010-4841) is published weekly, except February (5 issues), April (5 issues), May (6 issues), June (5 issues), August (7 issues), September (5 issues), October (7 issues), November (5 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Communications, Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

Copyright 1983 by CW Communications, Inc. All rights reserved.

PHOTOCOPY RIGHTS: permission to photocopy for internal or personal use, or the internal or personal use of specific clients is granted by CW Communications for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus \$0.50 per page is paid directly to Copyright Clearance Center, 21 Congress Street, Salem, MA 01970.

Permission to photocopy does not extend to copyrighted articles followed by this symbol: ©

Special requests should be addressed to Nancy M. Shannon, CW Communications, Inc., Box 880, 375 Cochituate Rd., Framingham, MA 01701. ISSN 0010-4841/82 \$3.00 + \$.50 \$1.50 a copy U.S. — \$44 a year; Canada, Central & So. America — \$110 a year; Europe — \$165 a year; all other countries — \$245 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

Computerworld can be purchased on 35 mm microfilm through University Microfilms Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700. Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Computerworld is indexed/write to Circulation Dept. for subscription information.

Houston Dropped as NCC '84 Site

By Bill Laberis

CW Staff

ARLINGTON, Va. — Due to a combination of inadequate facilities, sultry weather and diesel fumes, Houston has been axed as the 1984 National Computer Conference site.

That decision, reached recently by the conference organizers, the American Federation of Information Processing Societies, Inc. (Afips) here, brings up the questions of where — and when — NCC '84 will be held.

At press time last week, Afips directors were reportedly close to choosing among admittedly limited options. The Las Vegas Convention Center or McCormick Place in Chicago, site of NCC '81, are likely places. However, there is some question

about the availability of either facility for the dates the industry's principal show has traditionally been held, mid-May to early June.

Although Afips had not released an official statement on the matter by presstime last week, it is widely believed that complaints from scores of vendors who were at NCC '82 in Houston cast the die for Afips' cancellation in that city.

The trade show coordinator at Shugart Associates in Sunnyvale, Calif., last August carefully itemized what company officials claimed were appalling conditions of the Houston show last year. Three pages worth of complaints and criticisms were mailed both to Afips officials and to nearly 700 exhibitors at NCC '82. The

exhibitors were asked to return signed copies of the criticisms, stating they "fully agree with the attached concerns of the NCC Exhibitor" letter to Afips.

Included in the litany of complaints and criticisms were:

- The heat and humidity pervasive in the Gulf region in June, where attendees "experienced temperatures as high as 95 degrees with humidity ranging from 85% to 91%."

- An exhibit hall (the Astrohall) in "grave disrepair" with uneven floors, ceiling restrictions and, in general, "an atmosphere not conducive to successful business dealings."

- Hotels spread over a 500 square-mile radius, "combined with the city's infamous traffic problems."

- Housing which was in "questionable neighborhoods and unclear rooms in obvious disrepair."

The Shugart letter also complained of the presence of diesel and other noxious fumes that supposedly streamed into the non-air-conditioned exhibit areas during set up times.

Shugart officials said that one-third of the exhibitors, representing some 100,000 square feet of exhibit space, supported the letter.

The cost to Houston-area businesses of Afips' cancellation will be in the \$40 million to \$50 million range. Attendance at NCC is rapidly approaching the 100,000 mark.

Afips noted there is no change in NCC '83, which will be held May 16-19 in Anaheim, Calif.

Imlay to Keynote NCC '83

ANAHEIM, Calif. — John P. Imlay Jr., chairman of the board and chief executive officer of Management Science America, Inc. (MSA), will keynote the 1983 National Computer Conference (NCC '83), which is scheduled to take place here May 16-19.

The theme of NCC '83 is "The

Emerging Information Age: Computers, Communications and People." Imlay will focus on software as the key factor in human involvement in the future of personal computers.

Imlay joined MSA in 1968 after holding marketing and management posts at Sperry Univac and Honeywell, Inc. He was named chief executive officer in 1970; since then it has become a \$73.1 million software company.

Further details about NCC registration are available from Afips headquarters at 1815 North Lynn St., Arlington, Va. 22209.



John P. Imlay Jr.

AWC Meet Slated for May 15

ANAHEIM, Calif. — The Association for Women in Computing (AWC) will hold its Second Annual National Conference here May 15, concurrent with the National Computer Conference.

The AWC conference on "Women Emerging With the Information

Age" will address the subjects of women in top management, entrepreneurs and technologies in the forefront during the '80s.

Registration costs \$30. Details are available from AWC Program Vice-President Virginia Walker, 2813 N. Kensington St., Arlington, Va. 22207.

This Week

IN DEPTH

DOS to MVS Follows Page 26

NEWS

AT&T Brings 10,000 Circuits Back to Earth 4
 Survey Finds DP Salaries Up 6.5% This Year 6
 Cortex Unveils Tools to Expedite VAX Cycles 8
 McCormack & Dodge Updates Hllite Version 9
 Apple IIE Announced 10
 Promotion 'No Surprise' to Education Director 11
 Immigration Bill Reintroduction Considered 12
 First Beta Test User Lauds Contact for 'Smarts' 13
 Multiple Personalities 'Mapped' by Computer 14
 How Can We Help You? Senate Asks Vendor 15
 NSF Calls for National Supercomputer Effort 16
 Communications Chiefs Seen Under Gun 18
 N.Y. Bank Trying New Ways to Fire Up DPs 19
 No Recession for This DPer 21
 Stanford Gets Top Grade in Grad School Poll 22
 Trace Package Helping to Teach Assembly 24
 Off the Press 26

EDITORIAL

Editorial: In Search of a Measure 34
 Lecht on Science: Rebundling — Here to Stay 35
 Human Connection: Collegians Not Worried 35

SOFTWARE & SERVICES

Bank DP Service Firm Weathers Change 37
 'SourceManager,' 'DesignManager' Announced 38
 VCI Adds SMF Link, Dast to Billing System 39
 DEC, Softool Unveil VAX Facility 40

Data Service Converts System/34 to /38 42
 IEEE Approves Test Documentation Standard 44
 Mega System's DDS Gets Graphics Module 46
 ARA Data Base Announced 48

COMMUNICATIONS

Choosing Local Net Focus of Users' Seminar 51
 Efficient Local-Area Nets to Grow: Consultant 52
 Fiber-Optic Links Created for Pronet Systems 53
 IBM Micro Gets Tool for Modem 57

SYSTEMS & PERIPHERALS

CDC Ups Cyber Line, Cuts Memory Prices 59
 Utility First User of 3380-Like System 60
 Microcomputers Impacting Storage, Report Says 62
 Genrad Unwraps CAD Net Unit 64

OFFICE AUTOMATION

NCR Boosts Worksave; Offers Graphics Aid 71
 DEC-Compatible Tools Repriced 72

COMPUTER INDUSTRY

National Semi Acquires POS Terminal Maker 73
 Wang Promotes Top Managers 73
 Memorex Buys Into DMA 74
 DG Guilty of Fraud, Must Pay \$86,000 to OEM 75
 Plessey, Scientific-Atlanta Enter Joint Venture 76
 Commodore to Use Z8000 Family in Its Micros 77
 ACT Sells Services Subsidiary 78
 HP Establishes Personal Computer Group 79
 Hardware Makers Form NS16000 Users Group 81

ADVERTISING INDEX



POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Circulation Dept., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

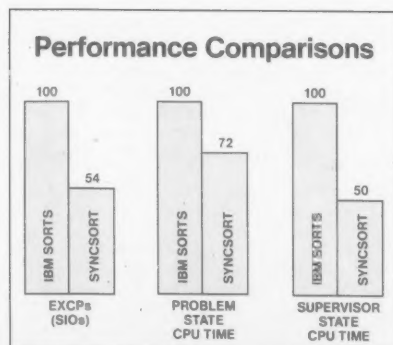
U.S.A.

**1972: SyncSort
was used by 2%.**
**1982: SyncSort
was used by 75%.**

**(We've come a
long way, baby!)**

Call (201) 568-9700.

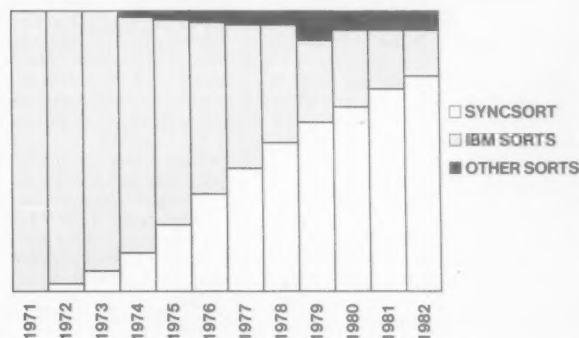
**Join the
American
Evolution.**



syncsort
INC.

THE FACTS: In a single decade, SyncSort has become the world's most popular independent software program.

In 1972, its first full year of production, SyncSort was used by only 2% of America's data processors. Today, it is the choice of 75% of the nation's major data processors, according to the most recent IDC sort survey. Just how steady this growth has been can be seen from the following charts:



PERCENT OF USERS IN THE U.S.*

Sort Used	1982	1980	1978
SyncSort	75%	69%	54%
IBM	19%	25%	42%
Other	6%	6%	4%

THE REASONS FOR SYNCSORT'S POPULARITY: In the past ten years, SyncSort has pioneered virtually every advance in sorting. Many of these innovations are now patented. As a result of this technological "sort gap," IBM sorts can no longer compete successfully with SyncSort in any of the following areas:

(1) PERFORMANCE: Because they operate more efficiently than IBM sorts, all three versions of SyncSort — OS, DOS and CMS — use fewer computer resources. The charts at left will give you an idea of the magnitude of these savings.

(2) PROGRAMMER PRODUCTIVITY: SyncSort drastically reduces the amount of time programmers have to devote to sorting. Using a combination of SyncSort's advanced features, it is often possible to reduce the amount of time required for simple reports from five programmer days to one.

(3) SERVICE: Our Technical Service specialists are the best in the field. They play a key role in shaping new SyncSort releases. And they handle more than 85% of all requests for sorting advice in less than 24 hours.

To those 6,500 users who made 1972-82 "the SyncSort Decade," our warm thanks. And to those who do not yet use SyncSort, it's never too late to reform your sorting!

*According to IDC's Sixth Annual Survey of Sort Programs Used in IBM OS and OS/VS Environments.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

User Complaints 'a Consideration'

AT&T Brings 10,000 Circuits Back to Earth

By Phil Hirsch

CW Washington Bureau

BASKING RIDGE, N.J. — Admitting that complaints from communications users were "a consideration," AT&T has transferred about 10,000 interstate dial-up circuits from satellite to terrestrial transmission facilities.

The move, which began quietly in late 1981, was made "primarily" to make room for high-speed wideband services, an AT&T spokesman here said last week.

Users have complained about problems stemming from the long propagation delay inherent in satellite transmission [CW, April 26, Sept. 7]. When half-duplex satellite circuits are used for interactive applications, the modems at the extremities of the message path must be adjusted accordingly — by allowing more "turnaround time" for the units to change from send mode to receive mode and vice versa. However, this increase does reduce throughput across the circuit.

User Must Adjust for Satellite

Because the user cannot tell whether a particular transmission will be routed over a satellite or terrestrial path, he must adjust his modem for satellite transmission and put up with the loss of efficiency.

It Won't Do Anything for Independents

Most Bell 201- and 202-compatible modems include a switch that enables the user to configure the equipment for satellite or terrestrial circuit operation. For the past couple of years, however, independent modem makers have been complaining about the difficulty of making their equipment communicate with Western Electric Co. modems over satellite circuits.

The basic problem is that Western Electric insists on charging a license fee for its modem turnaround timing specifications, explained Thomas L. Thompson, a vice-president of General Datacomm Industries, Inc. in Danbury, Conn., a leading independent modem maker. His company, as well as others, refuses to pay.

Pointing out that national telecommunications policy is based on the promotion of universal service, these companies argue that AT&T, as the setter of de facto standards, should make the timing information available free, particularly since it relates only to the communications protocol with which the parties at either end of the circuit must comply in order to communicate. The timing information does not relate to

the design of the equipment.

AT&T's decision to bring several thousand dial-up circuits down to earth does not really alleviate the problem, Thompson said, because General Datacomm and other independents must still design their modems to operate over both satellite and terrestrial circuits. AT&T, by comparison, knows what modem each of its customers is using and, therefore, has the capability to build equipment specifically for one type of service or the other, assign a different class of service to users of each and route them automatically over the most appropriate transmission path.

Thompson also pointed out that AT&T can change its turnaround timing specifications for terrestrial and/or satellite circuits at will, without disclosing that information to anyone else. A change like that would seriously disadvantage the phone company's competitors, he said, because it would prevent users of independently made modems from communicating with users of Western Electric modems, while not disturbing communications within the latter group.

Whatever the reason for AT&T's decision to make the circuit transfer, it may help at least some users. Based on figures supplied by AT&T, it appears that the transfer has reduced significantly the probability that a Message Toll Service/Wats user will be routed over a satellite channel. (Shortly after the transfers began in

late 1981, the chances of a circuit being routed over a satellite channel were about one in 20; at the present time, the chances are about one in 35.)

About 12,250 dial-up circuits beginning and terminating within the continental U.S. still pass through satellite transponders, compared

with 22,600 a year ago, according to AT&T spokesman Brian Wood. Whether and how quickly additional circuits will be transferred depends on the demand for the wideband television and data services that displaced these circuits, added AT&T Division Marketing Manager G. W. Phipps.

Digital PBX Unveiled by American Bell

(Continued from Page 1)

to an American Bell spokesman.

The electronic office capability introduced with System 85 is known as Electronic Document Communications. It reportedly allows office workers to prepare, store, send, receive and manage documents.

It also offers a Basic language feature and allows users to create forms, track personal schedules, arrange meetings and maintain tickler files, according to a company spokesman.

The sensor-based energy and security management feature receives and evaluates real-time data and implements customer-programmable and preprogrammed strategies for managing building facilities.

Networking Capabilities

System 85 provides networking capabilities by interfacing with existing electronic tandem, data and local-area networks. Through its Electronic Tandem Networking, it reportedly reduces costs by automatically routing calls over the most economical path and monitoring individual telephone calling privileges.

The digital communications processor and control information into a single high-speed digital transmission stream. The applications processor introduced for Dimension models last May allows System 85 to emulate an IBM 3270 cluster controller, a Teletype Co. Model 33/55 keyboard send/receive teleprinter or an IBM 2780/3780 remote job entry workstation.

The 16-bit microprocessor in the applications processor runs on a modified Unix operating system. It is

said to be fully compatible with Dimension Feature Package 8 Issue 3, thus allowing a common user interface and the capability to mix Dimension and System 85 in various network configurations and electronic mail networks.

Easy Expandability

The American Bell spokesman said the system architecture permits easy expandability through hardware and software additions and lets users reconfigure the system to their needs.

The PBX was developed entirely by Bell Laboratories, Inc. engineers who have subsequently moved to

American Bell. With the exception of the hard disk drive, it was manufactured entirely by Western Electric.

The 7000 series of terminals, also introduced here last week, provide access to the office and data capabilities of System 85. Some of them support simultaneous access to voice and data services.

Certain 7000 series terminals are not compatible with earlier Dimension models, the American Bell spokesman noted.

The 7000 series terminals are available under lease or purchase terms and range in price from \$735 to \$1,500 for purchase and \$5.50 to \$21 when leased.

Analyst Says System 85 Provides Security for Dimension Users

"It may be a theoretical security blanket for an awful lot of Dimension users out there."

That observation was made last week by Kenneth Bosomworth, president of International Resource Development, Inc., during an evaluation of the Dimension AIS/System 85 private branch exchange (PBX) from American Bell, Inc.

System 85 provides security to Dimension users, Bosomworth said, because it ensures continuity and upgradability, qualities they were afraid would not come with the much-ballyhooed PBX. American Bell "may not even expect to ship many of them [the System 85s]."

Bosomworth cited System 85's multiplexing capabilities as critical elements of the overall package. The

basic principle is to multiplex a number of slow-speed terminal data streams over "one or two or five" of the paths through the main switch.

In so doing, the problem of "blocking," or port congestion, is alleviated, allowing more users to place calls, he said. Like most PBXs, the System 85 is inherently non-blocking, Bosomworth added.

The PBX may be best used by medium-size to large organizations that have no near-term plans for the installation of coaxial cable-based baseband and broadband local-area networks, Bosomworth said.

Bosomworth sees no great advantage to the digital — as opposed to analog — nature of System 85: "The average user really doesn't know the difference."



CW Photo by B. Hoard

"Let there be no doubt about it, we in AIS are off and running," Archie J. McGill said last week as American Bell introduced its long-awaited digital private branch exchange.

John Malone, president of the Eastern Management Group, a Morris Plains, N.J., market research and consulting company, believes there will be no serious demand for System 85 and other third-generation PBXs until around 1985. "Internally, AT&T undoubtedly felt that they had to put a stop to all the badmouthing that was going on around the industry about the geriatric situation of the Dimension PBX itself," Malone said.

Victor Kreuger, Dataquest, Inc. vice-president of telecommunications industry service, lauded the American Bell PBX for its systems approach. "The system consists not just of the PBX, but terminals that go with it to perform a variety of office functions," he observed.

The Information Center

Theirs:

**QBE, GIS,
STAIRS, APL,
ADRS, SQL,
Etc...**

Ours:

INQUIRE[®]

Help users help themselves. That's the idea behind IBM's Information Center, where the data processing department will provide and maintain tools to allow users to retrieve, analyze, manipulate and present data (including textual material) more effectively.

***They've got the right idea,
but the wrong tools.***

When productivity is all-important, why buy, learn, and support a hodgepodge of ever-changing systems in your Information Center?

With a single non-procedural language easily learned in a few hours, **INQUIRE** can boost user productivity, DP productivity, and support the entire decision-making process.

We've been helping companies establish information centers since 1968. Call us toll-free today to find out how.

Information Center/Development Center Seminars
San Francisco — 2/17 and 2/24
Phoenix — 2/8
Los Angeles — 2/3 and 2/10

Infodata

Infodata Systems Inc.
5205 Leesburg Pike
Falls Church, Virginia 22041
800-336-4939
In Virginia, call 703-578-3430

Offices in:
Cleveland, Dallas, Houston, Los Angeles,
New York, Rochester NY, Tampa,
Washington, DC

*INQUIRE is a registered trademark of
Infodata Systems Inc.

©1983 Infodata Systems Inc.

Survey Finds DP Salaries Up 6.5% This Year

By Bruce Hoard
CW Staff

NEW YORK — Salaries for developers of DP education curricula are up 9.6% over last year, and overall DP salaries are 6.5% higher than a year ago, according to the latest nationwide Robert Half International, Inc. salary survey.

The study is based on analyses of thousands of position requests that employers submitted to the 75 U.S. Robert Half offices. It covers large, medium-size and small DP installations; several job categories are listed independent of installation size.

In order to determine the size of an installation, the firm considered a combination of hardware (CPU only) and the professional management staff (management, analysts and programmers). The hardware is judged by the size of the mainframe; the professional staff is judged mostly by the number employed. Large is over 50, medium is 15 to 49 and small is under 15.

Developers of DP education curricula registered the biggest salary gains among DPs, jumping from a \$22,000 to \$30,000 range to \$24,000 to \$33,000. Data base administrators in large installations were second, moving from a \$26,500 to \$33,000 range to \$29,000 to \$36,000.

By contrast, control analysts within operations departments at small installations received the lowest salary increases — 1.9%. That moved

them from the \$12,000 to \$14,500 range to \$12,000 to \$15,000.

Besides receiving the smallest salary hikes, the small organizations' operations control analysts also receive the lowest salaries, the study noted.

Management information systems (MIS) directors at large installations were found to earn the highest DP salaries, bringing in between \$49,000 and \$70,000. They realized a healthy 8.2% salary increase over last year.

Other DPs who realized big salary gains in terms of percentage were operations shift supervisors in large organizations (a 9.1% gain,

\$21,000 to \$27,000 range), systems programmers in large installations (8.8%, \$26,000 to \$36,000), DP audit managers in medium installations (8.6%, \$28,000 to \$35,000) and telecommunications specialists in medium installations (8.5%, \$21,000 to \$30,000).

Following MIS directors in terms of total salary were software development product managers who, the study claimed, are making between \$40,000 and \$60,000. Consulting managers earn \$40,000 to \$55,000 and technical support managers make \$35,000 to \$40,000.

"Employees with the same title

and with the same size company may be started at significantly different salaries based upon their technical and applications exposure," the survey noted. "This has to be weighed on an individual basis."

The study went on to point out that DP salaries do not appear to show much growth when compared with the cost of living index, calling that "an illusion" because DPs are often promoted rapidly, but not with the frequency of financial personnel.

The survey is available free of charge from Robert Half International, 522 Fifth Ave., New York, N.Y. 10036.

NCR Adds Two Micros, Local-Area Net

(Continued from Page 1)

Christened Decision Net, the local-area networking system announced by NCR last week supports up to 63 users simultaneously and costs \$500 per connection. It is based around Corvus Systems, Inc.'s 1M bit/sec Omninet local-area network with the addition of a vendor-developed file sharer called Modus.

Decision Net is the first offered by a major manufacturer to support systems by several manufacturers, according to Don Coleman, NCR's vice-president of development and production.

The Modus file sharer offers file security as well as the ability to share

records, files, programs and messages among computers. The file sharer has an on-board random-access memory, 5¼-in. floppy disk, a Winchester disk that holds up to 96M bytes and an optional streaming tape drive for backup.

Observers See NCR Making Defensive Move

More than a few industry analysts see NCR Corp.'s late entry into the microcomputer market as a defensive maneuver designed to protect its customer base from the established vendors.

NCR's foray into personal computing "seems to be a move designed to strengthen their customer base rather than an offensive move to gain market share," notes Aaron Goldberg, industry analyst at International Data Corp. (IDC) in Framingham, Mass.

But Don Coleman, NCR's vice-president of development and production, disagreed, contending that the newly introduced Decision Mate microcomputers represent an aggressive attempt to gain market share. "We are going after a major market share — major meaning we would like to be in the top five or six [manufacturers]," Coleman said.

Even if NCR does market the systems aggressively, many observers feel the mainframe and minicomputer manufacturer's move into the microcomputer market is too little too late.

"Unless the product has some remarkable attributes, I don't believe NCR has a broad enough market presence outside the retail industry and a couple of other areas to distribute a microcomputer product. Despite their size, they will have to fight for distribution with the other 250 microcomputer manufacturers," observed Ken Bosomworth, president of International Resource Development, Inc. of Norwalk, Conn.

NCR's Coleman also refuted this assessment, pointing out that NCR is putting together a dealer network to complement its direct sales force. The dealer network is designed to reach small businesses while the direct sales force will deal with large accounts.

In conjunction with the NCR unveilings, Gary Kildall, president of Digital Research, announced his firm has signed software licensing agreements with NCR that will see Digital Research providing NCR with its CP/M Plus and Concurrent CP/M operating systems.

An NCR spokesman said this agreement will provide Decision Mate V users with "hundreds of off-the-shelf application programs and a range of software tools and languages."

Further information about the products can be obtained from NCR at 1700 S. Patterson Blvd., Dayton, Ohio 45479.

NBS Offers Proceedings

WASHINGTON, D.C. — The National Bureau of Standards is offering the proceedings from its recently held "Data Base Directions" workshop. The workshop was co-sponsored by the Association for Computing Machinery.

Called *Data Base Directions: Information Resource Management — Strategies and Tools* (SP 500-92) the proceedings include an investigation into how federal and private industry managers can evaluate, select and use tools to manage information resources. The workshop paid special attention to the importance of data dictionaries in data base management.

The proceedings cost \$6.50 and can be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correction

In "One of First 'System W' Users Looked for Ease of Use, Training," [CW, Jan. 10], Neil Williamson was quoted as saying that one of the decision support systems with which his firm's users had problems because of the "complexity of the language" was FCS-EPS from EPS, Inc. The product to which he was actually referring is FCS from Financial Computer Services, Ltd., which is not the same package as EPS, Inc.'s FCS-EPS offering.

ATTENTION SOFTWARE PROFESSIONALS

Candle Corporation, an international software company (developer of OMEGAMON), is looking for extremely qualified people to work at our Los Angeles headquarters in the following areas:

MVS, IMS, CICS, VM Software Developers

Must have strong IBM Assembler programming skills, and extensive knowledge of the internals and performance considerations of these systems.

Capacity Planning Specialists

Extensive experience in modeling of computer systems, and interest in developing new technology for capacity planning.

Data Communications Specialists

Must have strong knowledge of VTAM, SNA, SDLC and diagnostic hardware to work in developing network monitoring technology. Strong IBM Assembler programming skills are required.

The existing openings are rare opportunities for the right individuals. You will work with some of the top software engineers in the world. If you are self-motivated and very competent in any of the above areas, please call (collect) or send your resume to Joanne Richardson for immediate consideration.

!Candle™

10890 Wilshire Blvd, Suite 2100
Los Angeles, CA 90024
(213) 475-7007

An Equal Opportunity Employer M/F/H
A-17H

DEC Running Into Problems?

(Continued from Page 1)

added to the already available advanced editor. But, a second DEC spokesman added, users who want the full-capability package have to make a hardware change.

A full line of software is available for the Professional 325 and 350, the first spokesman maintained. However, a DP manager who was scheduled to be one of Professional series' first users cancelled his order, citing a lack of software for the system.

Jason O'Neil, director of information services for *The Boston Globe*, "sat down [at the computer] at three different occasions at Decus," the DEC users group meeting held recently in California. Although he was satisfied with the hardware, "I called and canceled my order."

Why? "There's no Visicalc," O'Neil said. "When we ordered [the Professional micro] in November, DEC said delivery was imminent."

In fact, "the libraries of software won't be there for six months, and IBM is going to eat that market up. We went right out and bought three IBM [Personal Computers] and I'm glad we did, because if IBM becomes the standard — look out."

The first DEC spokesman said Visicalc will be available for the Professional micros in March, after it has run through DEC's internal testing. "The [testing] program holds things up a little, but we're just trying to protect the customer and the third-party software company."

A Visicorp spokesman confirmed that Visicalc would be available for the DEC micros "in the spring," but would not be more specific.

Computer retailer Barry Passen, president of Microcon Software Center, Inc. in Watertown, Mass., confirmed that much of the Professional software is not yet available. "Most of the major software products are due out in a few weeks, but right now there isn't much software for the Professionals," he said.

One of the developers of the original Visicalc had a reassuring message last week for users who have ordered the Professional micros.

"A lot of people have been getting real worried, but they should look at the other machines, like the Apple Computer, Inc. Apple II and the IBM," said Daniel Bricklin, chairman of the board at Software Arts, Inc. in Wellesley, Mass., who pointed out that a great deal of software was not available for either of those machines when they were first shipped.

"Canceling the order because there is no software isn't smart if you're already sold on the machine," Bricklin added. "If after [the micro] has been available for six months and there's not even demonstration software, then there's a problem."

Besides noting that Visicalc is not yet available for the Professional series, *The Boston Globe's* O'Neil complained that Prose, the word processing package for the micros, is too slow in some of its functions.

The second DEC spokesman noted that Select, which has "full word processing capabilities for the Professionals," is now available. However, he noted that users have to add an 8-bit processor card to run Select.

DEC Denies Hardware Late, Too

The apparent delay in software for the Digital Equipment Corp. Professional series of microcomputers comes on the heels of what some industry observers said has been a delay in hardware shipments.

But a DEC spokesman last week denied reports of a major production snafu causing delays. "The Professional series shipped in late November and early December. We planned to get it out in that time frame. We've had several thousand revenue shipments," he said.

However, Don Brown, a vice-president at Shearson/American Express, Inc., maintained that

"they're six weeks behind in shipments" because "their original production schedule is six weeks late."

"My reaction is that this would have an effect on sales, but [DEC's] official company position is that it won't." Despite the delay, industry analyst Brown said, "I'm pleased as punch that it is where it is. My conclusion is that DEC will be successful in selling through terminal dealers, authorized OEMs and systems houses."

Brown did not include retailers and mass merchandisers in his forecast "because I'm not predicting they'll be successful in that channel."

Asked about the delay in Professional shipments, Adolf F. "Sonny" Monosson, president of American Computer Group, Inc., a DEC distributor in Boston, replied, "Why should these DEC products be any different than any other DEC products? When they announced the original VAX, there were delays. They're not like IBM, who announces just before delivery."

Monosson himself has received no shipments of Professional micros, although a spokesman for Computerland, the chain of computer retail stores, said he has received shipments of the DEC machine.

Highest Overall Satisfaction*

INNOVATION DATA PROCESSING
FOR THE BEST DASD MANAGEMENT

1982 DATAPRO SOFTWARE SURVEY

- FDR ■ Compaktor
- Automatic Backup & Recovery

24 USER RESPONSES

RELIABILITY	3.8
EFFICIENCY	3.7
EASE OF INSTALLATION	3.6
EASE OF USE	3.5
TROUBLE-SHOOTING	3.5
DOCUMENTATION	3.3
USER EDUCATION	2.8
VENDOR'S MAINTENANCE	3.5
* OVERALL SATISFACTION	3.8

Mean Average User Rating on a scale of 4.0 for Excellent

Coming January 1983
V4.7 Performance
Improvement

- 10 to 30% Reduction in elapsed time
- 40 to 70% Reduction in Disk EXCPs
- 20 to 40% Reduction in CPU & SRB time

4700 Users
Proven Record of Reliability
Available for IBM OS/VS & MVS — 60 Day Free Trial

INNOVATION
DATA PROCESSING
970 Clifton Ave., Clifton, NJ 07013 • 201-777-1940

Application Development Aids Fit VAX, PDP

By Lois Paul
CW Staff

WELLESLEY, Mass. — Cortex Corp. has unveiled a set of three application development tools designed to expedite all phases of the software development cycle for Digital Equipment Corp. VAX-11 superminicomputers running under VAX/VMS and PDP-11 minicomputers running under the RSX-11M, RSX-11M+ and IAS operating systems.

The three tools announced by the vendor are the Cortex Application Builder, the Cortex Application Builder and the Cortex Application Accelerator.

• The Cortex Application Factory reportedly works in conjunction with the Application Builder, a fourth-generation language, to develop business applications. It includes standard procedures, such as menu screens, and standard mechanisms for using them, such as a table for menu items, which the designer can fill in interactively.

The Factory adds the ability to specify modules interactively. The software is intended to ensure that a generated module is consistent with other modules, according to a vendor spokesman.

• The Cortex Application Builder has evolved from Inform, the vendor's fourth-generation application development language. It reportedly consolidates, integrates and coordinates functions that include screen handling, report generation and applications programming into a single system.

Works With 'Factory'

The Application Builder works in conjunction with Factory, which generates modules written in Builder that are to be executed by Builder. According to Cortex, programmers can use Builder to add special purpose procedures to an application produced by Factory.

Throughout development, Builder and Factory are intended to accelerate

progress and to tailor the resulting application to the exact needs of its users through the use of prototypes, Cortex noted.

• The Cortex Application Accelerator boosts the runtime speed of resulting applications by transforming Builder and Factory program modules into DEC Macro assembler programs, which are then assembled into computer object code, Cortex said.

Facilitates Central Development

The Accelerator is said to also facilitate central development of computer applications distributed to multiple sites. Once the application is operational, Accelerator generates task images to run target sites so smaller machines can be used without sacrificing efficiency, the vendor said.

The Accelerator generates tasks that execute on VAX superminis under VMS and on DEC PDP-11 systems under RSX-11M and RSX-

11M+. The processors reportedly do not require any Cortex development tools, but do require the presence of the Cortex Data Handler for operation.

The three Cortex application development packages sold together will be available in the second quarter of 1983 for \$49,500. Separately, the development packages will range in price from \$15,000 to \$25,000 each, according to the spokesman. Additional information can be obtained from Cortex, located at 55 William St., Wellesley, Mass. 02181.

Siggraph Wants Award Choices

DETROIT — The Association for Computing Machinery's Special Interest Group on Computer Graphics (Siggraph) is accepting nominations for two newly established special recognition awards. The awards will be presented here on July 25, during the opening session of Siggraph '83, the 10th annual Conference on Computer Graphics and Interactive Techniques.

The Steven Anson Coons Award for Outstanding Creative Contribution to Computer Graphics has been established to recognize an individual's long-term creative impact upon the computer graphics field. A \$1,500 cash prize will be awarded.

The Computer Graphics Achievement Award carries a \$500 cash prize and recognizes significant recent accomplishments of an individual in computer graphics. Areas of accomplishment to be considered when selecting this award recipient will encompass both theory and application. It will include, but not be limited to, works of art, algorithms and hardware designs.

Nominations for the awards should include why the person is being nominated, a professional biography and bibliography and the nominator's name, address and telephone number. They should be sent by March 1 to Jon Meads, Awards Chairman, 2516 N.E. 19th Ave., Portland, Ore. 97212.

GML Guide Covers Micro Offerings

LEXINGTON, Mass. — There are more than 800 microcomputers now on the market, according to the recently published "Microcomputer Review," from GML Corp., a reference text that covers commercial offerings ranging in price from \$99 to \$50,000 from some 325 companies.

The guide includes business microcomputers, process control units, scientific/engineering systems, personal computers, word processing micros, military systems and special applications microcomputers. It contains product reviews that list hardware characteristics, interfacing, packaging, communications, peripherals and software support.

Annual subscription to the 500-page loose-leaf review costs \$175. Further details can be obtained from GML at 594 Marrett Road, Lexington, Mass. 02173.

Fearless 1106 Predicts Super Bowl

Goode Calls It: Dolphins By a Whisker

By Bruce Hoard
CW Staff

LOS ANGELES — "Based on an objective analysis and a weighted equation of all the key stats, the numbers say Miami by a short edge over Washington."

If that lingo sounds familiar to you, it should. Bud Goode, body surfer, former aide to Groucho Marx and

dauntless pigskin prognosticator is talking it again.

This year, because of *Computerworld's* weekly schedule and the succession of National Football League play-off games leading without pause to Superbowl XVII, CW asked Goode to pick the American Football Conference (AFC) and National Football Conference (NFC) winners

in addition to the Superbowl champs. The man who sells weekly 80-page computerized readouts to several National Football League head coaches responded to the challenge courageously: Miami over New York, Washington over Dallas and finally, for all the marbles, the Dolphins over the Redskins in Pasadena Jan. 30.

'A Dismal Science'

One needs only to consult today's sports page to verify Goode's AFC-NFC championship calls. If he was right, he's happy. If not, well, he only calls 'em as his Sperry Univac 1106 sees 'em. In his own words, "It's a dismal science."

Here's the Goode Superbowl XVII scenario: Two very tight games will be decided by the home field advantage, which is worth three points in the play-offs.

Goode made his picks based only on hard, cold numbers. If the Cowboys lived up to their stats, they should have scored 24.75 points ("of course, that fourth decimal figure is a crock,") and given up 19.91, leaving them with a positive figure of 4.84. By the same token, the Redskins should have scored 22.31 and given up 16.41, giving them a positive figure of 5.90.

"It looks like Washington without a home field advantage is 5.9 points better than their opposition, while Dallas is only 4.84. Now I add between two and three points for the home field advantage and I've got Washington by two to three points," he said.

Applying the same criteria to the Jets-Dolphins tilt, he came out with Miami as a one-point favorite.

So what happens if and when Miami meets Washington in Pasadena? Goode was reluctant to discuss the final battle before the semifinals were concluded. Too much room for statistical variance, too many unpredictable human foibles. Just Miami over Washington.

TI-MIX 1983 INTERNATIONAL SYMPOSIUM

A CONFERENCE FOR USERS AND PROSPECTIVE USERS
OF TEXAS INSTRUMENTS COMPUTER EQUIPMENT

April 5-8, 1983

New Orleans Hilton

Four days of sessions — workshops, panel discussions, and individual presentations for the technical, nontechnical, end user, and reseller.

Exhibits — See the latest in hardware and software from Texas Instruments and TI-MIX members.

For information about registration, exhibits, or TI-MIX agenda advertising, contact:

TI-MIX, M/S 2200
P.O. Box 2909
Austin, Texas 78769
(512) 250-7151

This ad is paid for by TI-MIX and these participating companies:

ANALOG TECHNOLOGY CORPORATION
Irwindale, CA
(213) 960-4004 (See us at booth #16.)

ATC's new Model 195 controller vastly simplifies repetitive forms, label and barcode encoding and printing on the TI 810 RO printer.

CUSTOM SYSTEMS, INC.
Eden Prairie, MN (See us at booths
(612) 941-9480 #61 & 62.)

CSI's complete line of peripheral controllers for 990 series includes SMD disk controllers, magnetic tape couplers, multiplexors, and line printer controllers.

MCBA
Montrose, CA (See us at booths
(213) 957-2900 #30 & 31.)

MCBA will be demonstrating their field-proven applications software for accounting/distribution and manufacturing environments. MCBA's software runs on TI's DS990 and Business System 300 computers.

MICRO-BASE CORPORATION
Dayton, OH (See us at booth #20.)
(513) 439-4560

Teletype emulation "TTYEMU" enhancement to the TI DX10 operating system. Asynchronous communications to a variety of time sharing and/or host processors.



McCormack & Dodge Updates Query System

NEEDHAM HEIGHTS, Mass. — McCormack & Dodge Corp. has released Hilite 2.0, which it called a completely revamped version of the on-line query system for its financial packages. Hilite 2.0, which runs on IBM and plug-compatible CICS systems, is also the first application to come out under McCormack & Dodge's Advanced Financial Systems development methodology (story below).

The major enhancements to Hilite include a linking feature that allows an accountant to follow audit trails of current and historical activity across individual McCormack & Dodge data bases. For example, a user can follow an expense account from the General Ledger system through invoices in Accounts Payable to authorizing purchase orders in the purchasing system, the vendor explained.

Another facility added to Hilite

reportedly enables end users to create their own screens, which can display one or many records on the terminal at a time.

In addition, Hilite 2.0 includes an on-line documentation feature that users can access via a single Help key on the keyboard. A McCormack & Dodge spokesman noted that this documentation feature is available for each field on the screen and/or each error message. Users also can

add to or modify the documentation to meet their specific needs, the spokesman said.

Hilite 2.0 also features user-determined search fields, amount totaling and subtotaling, enhanced security and a "wild-card" capability that allows users to query information when only part of the identification is known (for example, EMPLOYNUM=3??5).

Hilite 2.0 is priced at \$15,000 for the first application and \$5,000 for each additional application, the McCormack & Dodge spokesman said. The enhanced facility is free to current Hilite users who are under the maintenance contract. McCormack & Dodge is located at 560 Hillside Ave., Needham Heights, Mass. 02194.

'Hilite 2.0' the First Application of AFS

By Lois Paul
CW Staff

NEEDHAM HEIGHTS, Mass. — Version 2.0 of Hilite, announced recently by McCormack & Dodge Corp., is the first application of Advanced Financial Systems (AFS), a design methodology that McCormack & Dodge is using to develop on-line real-time functions for its existing applications as well as new applications.

AFS applications will be a reality for McCormack & Dodge users in 1983, according to John Landry, vice-president of research and development. "We will probably replace, functionally, all the on-line facilities we currently have on the system. We will be releasing Fixed Assets, General Ledger, Accounts Payable, Purchasing, Payroll and Personnel — all on-line functions under the control of AFS," Landry said, stressing that this will not involve additional cost to users of these packages.

Also, if a General Ledger package user decides to add the Accounts

selection as being the key component of on-line systems," Landry said. "What we were trying to do is create a very consistent way of defin-

ing files. Hilite is an application of AFS because it uses AFS techniques to build the information it needs to do queries and to store queries.



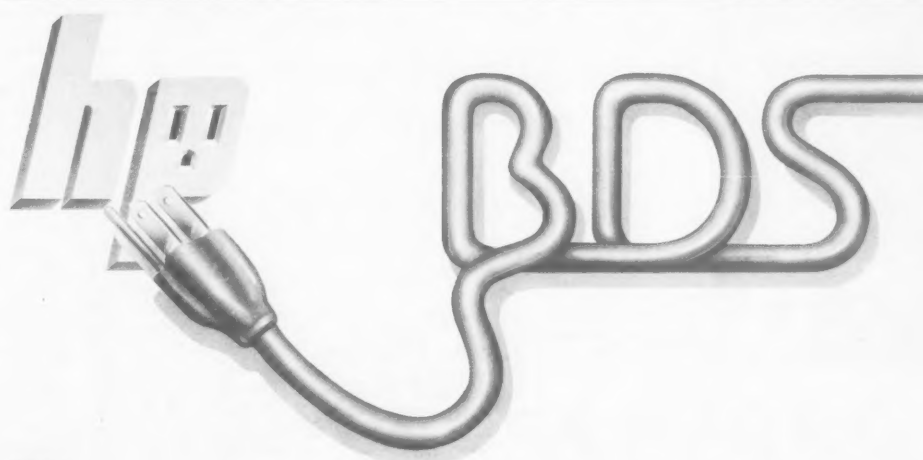
CW Photo by P. Gelin

AFS gave McCormack & Dodge 'the opportunity not to be required to develop a system, just to develop technology which we could then re-use in building systems,' said John Landry, vice-president of research and development.

Payable package, McCormack & Dodge will only have to deliver a data dictionary, high-level language procedures and screens. "He will load all data into his AFS control file and be ready to process payables with no impact on the DP staff whatsoever," Landry said.

This points to what the vendor feels will be a major impact of AFS — the ability to enhance its packages much faster than in the past.

"AFS is an outgrowth of what Hilite started out to be. We keyed in on



**BDS
PRINTER
SYSTEMS**

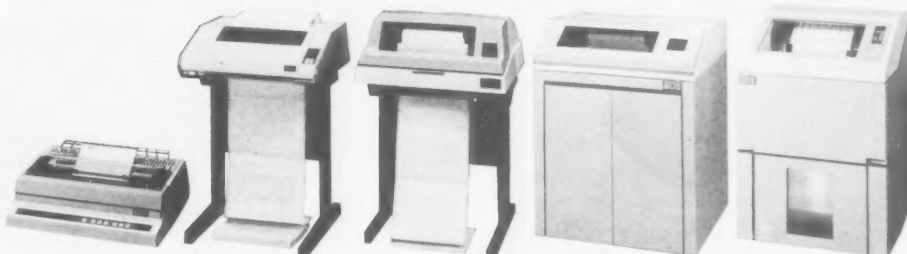
**Plug
Compatible**

**Latest
Technology**

**Savings
30 to 50 %**

**Nationwide
Service**

**Controllers and
Interfaces**



HP Printer Model (1)	2601	2631B	2613	2608/2617	2619	
BDS Replacement	LQ-40 40 cps Daisy Wheel	M200 200 lpm Matrix	B-300 300 lpm* Band	B-600 600 lpm* Band	B-1000 1000 lpm* Band	BP-1500 1200 lpm* Band

(1) 2613, 17, 19 interchangeable with 300-600 printer line

*Print speed with 64 character set

HP Computer Model	HP 1000/21 MX	HP 3000/III	HP 3000/30/33/44/64	Remote Spooled Printer (2631B)
BDS Controller	HPC-21	HPC-30	HPI-33	HPI-31



**"It pays to have the
right connections."**

BDS Corporation
1120 Crane Street
Menlo Park, CA 94025
(415) 326-2115
TWX 9103732005 (BDS MNPK)

BDS Computer (UK) Ltd.
125 Highgrove Street
Reading
RG1 5EN, England
(0734) 862183
Telex: 847423 (COCRG)

BDS Computer Australia Pty Ltd.
8th Floor, 445 Toorak Road
Toorak, Victoria 3142
(03) 241 8901
Telex: AA39067 (BDS AUS)

What
you
never
learned
from
the
hardware
vendor...



VSAM PERFORMANCE

Hands-on VSAM Programming in COBOL Workshop/2 Days

Process Key Sequenced Data Sets in COBOL. Process Relative Record Data Sets in COBOL. Process Entry Sequenced Data Sets in COBOL. Process Alternate Indexes in COBOL. Handle File Status. Use the ISAM/VSAM interface program. Prepare VSAM JCL Program for Performance.

VSAM Performance Workshop/2 Days

Choose allocation parameters for VSAM Data Sets to optimize performance. Place components of VSAM clusters on single or multiple volumes to achieve performance objectives. Use the Access Method Services utility program to allocate VSAM Data Sets and catalogs. Choose VSAM processing options to optimize performance. Determine when a VSAM Key Sequenced Data Set requires reorganization. Determine the usage characteristics of an existing VSAM Data Set from catalog information. Design and implement a backup and recovery plan for VSAM Data Sets and catalogs. Install a VSAM Alternate Index.

VSAM Data Facility Workshop/1 Day

Decide when to use Indexed VTOCs and other features of Data Facility/Device Support. Evaluate the performance and backup implications of VSAM Volume Data Sets. Establish Indexed VTOCs and VSAM Volume Data Sets.

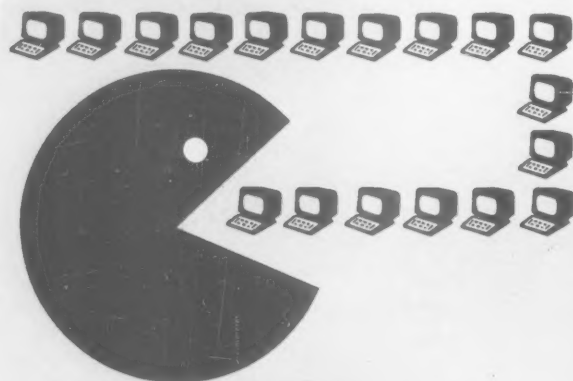
Course Schedule:

Baltimore Jan. 19-20 Performance; Jan. 21 Data Facility. Dallas Jan. 31-Feb. 1 Performance; Feb. 2 Data Facility. Burlington, VT Feb. 14-15 Programming; Feb. 16-17 Performance; Feb. 18 Data Facility. Newark, NJ Feb. 21-22 Programming; Feb. 23-24 Performance; Feb. 25 Data Facility. St. Louis March 9-10 Performance; March 11 Data Facility. San Francisco March 23-24 Performance; March 25 Data Facility. Boston April 4-5 Programming; April 6-7 Performance; April 8 Data Facility. Newark, NJ April 25-26 Programming; April 27-28 Performance; April 29 Data Facility. Atlanta May 9-10 Programming; May 11-12 Performance; May 13 Data Facility.

Inhouse Presentation available. For more details on all our courses and to make reservations call Tom Evislin today at 802 229 0368.

The VSAM Company,
Dept. 22, Box 989, Montpelier, VT 05602

SOLUTIONS, INC.



Introducing a hungry market for computers.

There are 35,748 public, academic, and business libraries in the U.S., more and more of which are making major purchases of mainframe, micro and minicomputers, while increasing numbers are planning such purchases. ☐ For librarians who run these libraries, LIBRARY JOURNAL is the leading magazine for news and developments in the field and for information on the burgeoning growth of computer use and applications in libraries. ☐ If computers are your business, take a close look at this hungry market. Return the attached coupon to receive our exciting McGraw-Hill study, "Computers in the Library."

LIBRARY JOURNAL Mail coupon to: Ms. Carol Brissie,
Research Manager,
LIBRARY JOURNAL, 1180 Avenue of the Americas, New York, N.Y. 10036.

☐ Please send me "Computers in the Library."

☐ Please have a LIBRARY JOURNAL representative call me.

Name _____ Title _____

Company _____ Telephone _____

Address _____

City _____ State _____ Zip _____

Apple Enters Office Arena

(Continued from Page 1)

Several of these applications or their associated documents can be displayed on the system's 12-in. screen simultaneously, and users can switch at will from one package to another without having to swap floppy diskettes, Apple said.

Moreover, users can pass data back and forth among the various applications with the help of an electronic "mouse," which executes many of the same commands as Lisa's keyboard but reportedly does so more efficiently.

Great Lengths

Apple appears to have gone to great lengths to make its latest micro-computer system as easy to use as possible. With the company's flagship system, the Apple II, users typically need 20 to 40 hours of hands-on training before they can consider themselves technically proficient. But with Lisa, the same first-time users can learn how to run a given application in only slightly more than 20 minutes, an Apple official claimed.

Most of Lisa's purported ease-of-use features can be traced directly back to the system's software, which altogether consists of some two million lines of code that took roughly 200 man-years to write. Apple also attributes the ease-of-use capability to the mouse, which serves basically as a hand-held cursor-positioning tool and to Lisa's pictorial method of representing typical office functions.

Along the bottom of the system's display screen appears a series of drawings that resemble familiar office fixtures such as a file folder, memo pad and wastebasket. Each picture corresponds to a different office function such as retrieving the contents of existing files, creating new files, returning information to its rightful file and disposing of outdated information.

To perform a particular task, an individual uses the mouse to move the cursor to the appropriate drawing. Lisa automatically executes the task corresponding to the picture on which the cursor rests.

Built around a Motorola Corp. MC68000 microprocessor, the system

Enhanced Model Of Apple II Out

CUPERTINO, Calif. — Apple Computer, Inc. last week also announced the Apple IIE, an enhanced version of its Apple II.

The Apple IIE is intended as a replacement for the company's aging Apple II, volume shipments of which ended on Jan. 18. Billed as the first personal computer ever to incorporate very large-scale integrated circuitry, the Apple IIE requires just 31 electronic components compared with 110 for its Apple predecessor, a company official said.

In addition, the Apple IIE boasts up to 128K bytes of random-access memory (RAM) and 63 keys on its terminal keyboard, compared with 64K bytes of RAM and 52 keys for the Apple II, the official said. Both products, however, are said to run basically the same application software.

The IIE, available now, costs \$1,395 from Apple, 20525 Mariani Ave., Cupertino, Calif. 95014.

comes with 1M byte of main memory and two 5¼-in. floppy disk units with a combined mass storage capacity of 1.7M bytes. Lisa also supports Digital Research, Inc.'s CP/M operating system and Microsoft, Inc.'s Xenix operating system as well as three widely used programming languages — Basic, Cobol and Pascal, a spokesman said.

Compatible With Apple-Net

In addition, the system is compatible with Apple-Net, which allows the machines to be interconnected to form local networks.

A Lisa system incorporating a 1M-byte CPU, two built-in floppy disk units, a 5M-byte hard disk unit, six integrated application programs and a display screen with keyboard retails for \$9,995.

Shipments of the product begin this spring from Apple at 20525 Mariani Ave., Cupertino, Calif. 95014.

IBM Prodding Users to Buy

(Continued from Page 1)

This marks the second reduction of this kind in this computer family [CW, Feb. 15]. When the 3080 series debuted in 1980, users could have 50% of their lease or rental payments count toward an eventual purchase.

Moreover, the announcement came in the wake of a number of other IBM price cuts and rental hikes for IBM's 3380 disk drives and 3880 controllers [CW, Dec. 27-Jan. 3].

The latest announcement is consistent with IBM's marketing strategy across its product board to make it more attractive for the user to buy than rent, Hart observed.

"The main motivation is to enhance the outright sale of the equipment up front as opposed to later. By dropping [the purchase percentage options] to 20%, you've really taken the incentive to lease away. This has a positive effect on swinging the

rental/purchase decision toward purchase," he explained.

This strategy also serves to keep leasing companies from stepping in and taking business away from IBM in cases where lessees really do not want to buy, Hart maintained.

"Over time," he hypothesized, "you might see IBM only selling [as opposed to leasing]. I could see them moving in a direction where they would drop all rental and leasing options."

"Or," Hart added, "they could make the leasing prices extremely unattractive. Like with the 4320 machine: After 14 or 15 months of renting, you will exceed the [purchase] price of the machine."

Further details on the announced price changes, a spokesman said, can be obtained from IBM marketing headquarters at 4111 Northside Pkwy., Atlanta, Ga. 30327.

Promotion 'No Surprise' to Education Director

By Marguerite Zientara
CW Staff

BOSTON — What happens when a director of DP education for 800 DPers is suddenly catapulted into the role of director of corporate education for 8,000 corporate employees in 140 locations?

If the director is Roger Sullivan of Commercial Union Insurance Co. here, the move comes as no real surprise. After all, Sullivan has spent the last few years conducting an "informal marketing effort" to give upper management a general idea of how corporate hierarchies are changing and what their future educational needs might be.

"The things we have been doing in data processing — we've been dealing with ongoing education for 85% to 90% of our [DP] people — are what companies are going to face as they automate further and have a much larger proportion of professional people who are managers," Sullivan observed in a recent interview. "I see our role as managing an education process using any mix of options needed to effectively provide the education people need, after we've identified the need using a job analysis system and an individualized needs assessment system."

Sullivan believes "companies will ... have to educate growing numbers of workers and, as they do, at all levels of the corporation, they are going to have to restructure their organization to be able to effectively manage and deliver the education needed on this scale."

Anticipated Changes

Before Sullivan assumed his new position as director of the Corporate Education Resource Center this month, he put a great deal of thought into just what those changes might be and the adjustments needed to accommodate them. In Commercial Union's case, "We have enfolded four separate corporate education departments in the various areas of the company together with a corporate education service organization we already had," he said.

In an operation that is "largely what I was doing on a smaller scale, now enlarged to a greater scale," Sullivan now works within a five-armed

organization that "will allow us to implement on a corporate basis most of the methodology we had developed for data processing." Those five components are:

- A conference and education center.
- An audiovisual and instructional design unit.
- An education user liaison unit (in effect, an education marketing arm to the rest of the corporation).
- A supervisory management education unit.
- An education resource center that has five areas of responsibility: to put a job analysis and needs assessment system into effect; to recognize the option packages from the outside that might be available for the corpo-

ration and recommend their use where it would be effective; and to develop a learning package distribution center where self-learning educational materials (both technical and nontechnical) can be sent throughout the country to branch offices.

In addition, the education resource center is charged with setting up a prototype learning center in the home office — with classrooms, video center and library — to satisfy the third of the company that exists locally. Future plans call for a center in each of the company's 10 regions.

Moreover, the education resource center will do trending and forecasting of societal events that may impact the education process and "keep



Roger Sullivan

the corporation aware of what's coming down the pike so we can prepare for it," Sullivan said.

Is The One Software Package You Need Most Listed In The Directory You Haven't Bought?

Fill the gap in your reference library... and discover the fast, easy way to find proprietary software!

No matter what type of business you're in... no matter what kind of mainframe or minicomputer you have... you'll find the software you need, quickly and easily, in the *International Directory of Software*.

This is one software directory that's truly convenient to use. All the information you need to choose software is in one compact volume. Its unique indexing system leads you straight to the packages that will perform the tasks you require, on your existing hardware. In minutes, you can compare suitable products... assess the strengths of their suppliers... and choose the one that best suits your needs.

The Directory provides complete, up-to-date coverage, too. It guides you to over 5,100 proprietary software products for hundreds of systems and applications functions. It includes software packages developed and sold worldwide—many from suppliers not listed elsewhere. Moreover, detailed updates are supplied quarterly. So when you can't find what you need in other directories... you're likely to find it here.

Special Offer—Save 20%

The new 1983/84 edition of the *International Directory of Software* will be published in May. But now you can order it at the special prepublication price of \$240.00. That's a saving of 20% off the regular price... and it includes the quarterly updates. (If you choose not to receive the updates, you may order the Directory only for \$195.00.) To order, call the number below... or fill in and mail the coupon. Send no money; we'll bill you later. Or you may charge your purchase to American Express, MasterCard, or VISA.

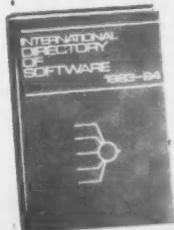
There's no risk. Once you receive the Directory, use it for up to 30 days. If you don't agree that it offers the quickest way to search for software... return it and pay nothing.

Remember, if the *International Directory of Software* helps you locate just one software package necessary for your data processing operation... it's paid for itself many times over. So mail the coupon today.

Order By Phone: For faster service, call Mrs. Smith at 1 609 452-8090, Monday-Friday, 9AM-5PM EST.

Mail to: International Directory of Software, First Federal Building, Suite 401, Pottstown, PA 19464

☐ YES, send me the 1983/84 edition of the *International Directory of Software*—plus updates—at the special prepublication price of \$240.00 (plus \$4.00 for shipping and handling). I may use the Directory for up to 30 days... and if I am not completely satisfied, I may return it and pay nothing.



☐ I do not wish to receive quarterly updates. Please send me a copy of the Directory only, at \$195.00, plus \$4.00 for shipping and handling.

☐ Check enclosed. ☐ Bill me. Charge my ☐ Amex ☐ MasterCard ☐ VISA

Expiration Date _____ Account Number _____

Signature _____

Name _____

Title/Company _____

Address _____

City _____ State _____ Zip _____

Business Phone Number () _____

Area Code _____

Quarterly Updates Keep You Informed

Each quarter, you'll receive four separate reports on developments in: systems software... accounting and administration applications... banking and insurance applications... and specialist applications. These reports will give you full details on the newest products... so you'll have all the facts you need as they become available.

Bankers' Meet Set for Feb. 17-18

PALM SPRINGS, Calif. — Hogan Systems, Inc. is sponsoring a two-day conference focusing on competition in a deregulated environment. The conference is scheduled for Feb. 17-18 at the Rancho Las Palmas Resort here.

The conference, which is primarily for bankers, will address current issues and future trends. The format will enable senior-level executives from major financial institutions to exchange information on new banking products such as automated teller machines and banking software, according to the sponsor.

The cost of attending the conference is \$495. Hogan Systems is located at Suite 400, 14951 Dallas N. Pkwy., Dallas, Texas 75240.

Datacomm Briefs

AT&T to Add 900 Miles Of Optical Fiber by '85

BEDMINSTER, N.J. — Nine hundred more miles of high-capacity optical-fiber communications channels — able to transmit 432M bit/sec — will be put into service by late 1985, AT&T announced here last week. The specific routes will be disclosed next month.

The phone company already has 37,000 miles of optical fiber in service on more than 60 major routes. It plans next month to activate the first leg of the world's longest fiber-optic transmission cable, stretching from Mosely, Va., to Cambridge, Mass. The cable reportedly will be able to carry up to 80,000 phone calls.

The system announced last week initially will be able to carry up to 150,000 calls, but improved technology is expected to double this capacity, AT&T said.

Local Phone Company To Offer Financing

NEW HAVEN, Conn. — Southern New England Telephone Co. (Snet), which recently formed Sonecor Systems, Inc., a separate subsidiary, to market voice and data terminal equipment on a deregulated basis, announced here last week that it can also offer financing.

Snet has formed another subsidiary, Sonecor Credit Corp., in collaboration with Borg-Warner Accep-

tance Corp. Snet is owned 23% by AT&T. It is believed to be the first Bell operating company to begin marketing terminals through a separate subsidiary. Snet is reportedly selling equipment made by Western Electric Co., Northern Telecom, Inc., Mitel Corp. and Tie Technicon.

Rochester Phone Plans To Enter Net Business

ROCHESTER, N.Y. — Rochester Telephone Corp., an independent carrier, has announced plans to go into the network business. The company will initially offer voice, data, video and facsimile services to interstate private-line users in New York,

Connecticut and New Jersey, but intends eventually to go nationwide.

Rochester Telephone expects its 6-GHz to 11-GHz microwave-based network to begin operation late this year.

Concurrent with the announcement of the new network, Rochester Telephone said it has requested authorization from the Federal Communications Commission to operate digital termination systems in Buffalo, Syracuse, Rochester and Albany, N.Y., in addition to Stamford, Conn., and Honolulu. The first five cities are among the seven that will be interconnected initially by the new microwave network (the other two are New York and Newark, N.J.).

Sponsors of Immigration Bill Considering Its Reintroduction

WASHINGTON, D.C. — The sponsors of controversial immigration reform legislation that would require a national worker identification system are now considering whether to reintroduce the bill, which failed to get final approval before Congress adjourned late last month.

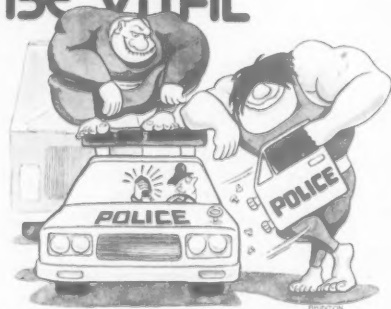
The Immigration Reform and Control Act, a sweeping rewrite of the nation's immigration laws, easily passed the Senate last year before becoming bogged down in the House amid disagreements about its illegal alien amnesty provisions and its provision to penalize employers for hiring illegal aliens.

As part of the employer sanction

plan, the legislation would direct the administration to develop a counterfeited-proof system to identify persons eligible to hold jobs in the U.S. Opponents of the system within Congress and the administration argue that it would cost billions of dollars and constitute a de facto automated national identification system subject to "totalitarian" governmental abuse [CW, Aug. 30, Oct. 18].

The considerable controversy surrounding the legislation could not be resolved during the final weeks of the last Congress. The bill's supporters should reach a decision on whether to reintroduce the bill within the next few weeks, according to Capitol Hill sources.

RESPONSE TIME CAN BE VITAL



Just hold onto them another minute, O'Malley. I'm sure to get computer response on the missing vehicle sometime soon . . .

HERE'S HOW TO MEASURE IT:



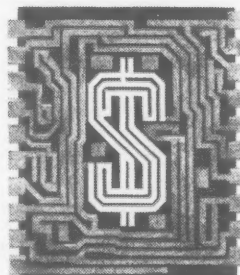
We manufacture a full line of Response Time/Communication Performance Analysis Monitoring equipment for data communication lines.

Our portable and modular rackmount equipment is capable of monitoring most protocols, including async, bsync, SDLC/SNA, Univac, Honeywell, pars, etc.

For further information write or call
QUESTRONICS, INC.

3565 South West Temple Salt Lake City, Utah 84115 (801) 262-9923 TWX 910-925-4000
IN CANADA CALL: ATELCO (416) 497-2208

Invest your money where you've invested your future.



Technology.

You're in the technology business. So you know better than most people that investing in technology could mean big profits for smart investors. The difficulty is knowing which opportunity offers you the greatest potential.

With Fidelity Select Portfolios, you can get a professionally managed portfolio concentrated in technology stocks, and these important benefits:

- no commissions, no sales charge.
- a compact and responsive portfolio designed for aggressive investors.
- fully invested in technology stocks.
- management by technology specialists.

Plus you have the flexibility of switching** among all six Fidelity Sector Portfolios: Technology; Energy; Precious Metals and Minerals; Health Care; Utilities; Financial Services—or into a Fidelity money market fund—with just a single phone call.

The Fidelity Technology Sector Portfolio. For people who want to make the most of what they know. Call toll-free for more information.

Call Free 800-225-6190
In Mass. Call Collect (617) 523-1919

P.O. Box 832, Dept. KO-012483
82 Devonshire St., Boston, Mass. 02103

For more complete information, including management fees and expenses, please write or call for a prospectus. Read it carefully before you invest or send money.

Name

Address

City

State

Zip

FIDELITY
SELECT PORTFOLIOS

*There is a 1% fee for redemptions out of the fund.
**A taxable gain or loss may be realized in connection with such transfers.

\$4,000 Executive Workstation

First Beta Test User Lauds Kontakt for 'Smarts'

By Bruce Hoard

CW Staff

KANATA, Ont. — The first beta test user of Mitel Corp.'s \$4,000 Kontakt executive workstation said it has more "smarts" than the Northern Telecom, Inc. Displayphone and is more "truly" an executive workstation than the more expensive Xerox Corp. 8010 Star.

Kontakt, the first member of Mitel's Executive Work System, will be available in the U.S. this spring. It combines electronic mail, time management, financial planning, data communications and word processing with voice telephony and works on analog telephone systems.

Its basic hardware features include a multiline telephone, dynamic keyboard, 12-in. display, 8-bit Motorola, Inc. 6809 microprocessor, 128K bytes of random-access memory, 5¼-in. 320K-byte diskette drive and built-in modem.

Kontakt's first user is Statistics Canada, a federal agency. Statistics Canada is pleased with the terminal because it has done what it was expected to do, according to Dennis Harrington, technical analyst for the company's Production and Services Division.

Asked to compare Kontakt with the \$10,000 to \$15,000 Xerox Corp. Star workstation, of which his division has three, Harrington replied, "It's a different thing altogether. The Kontakt is more of a truly executive workstation, more so than the Star."

Although Statistics Canada did not test Northern Telecom's Displayphone, Harrington said he had looked at the device, but dismissed it. "It wasn't software driven and it didn't have the smarts Kontakt does," he explained. "Kontakt is really a micro, so it does have a lot more smarts to it."

Packages Arriving

Much more will be known about Kontakt after three crucial applications software packages that Mitel is developing arrive and are tested, Harrington said. The three packages are Execucalc, an electronic spreadsheet package; Execuwrite, a word processing package; and Execubasic, a Basic language programming package.

If the three software packages are satisfactory, Kontakt will be usable by executives, secretaries and programmers. Statistics Canada was told when it starting testing Kontakt on Nov. 20 that the three would be available by April or May.

Harrington has spent considerable time working with the two Kontakt terminals being tested, and he likes them.

"Everything that we got it for and the standard software that we got with it is doing the job up to this point," he said in a recent interview. "We would really like to get our hands on the Execubasic and the Execucalc."

However, Harrington is not totally pleased with the terminal. "The only weakness I see is I'd like to be able to download files," he said. "I want to be able to get into the system, download a table, store it on a



Kontakt Executive Workstation

disk and then transfer it to another Kontakt."

The two terminals are being used by the division director and his sec-

retary, both of whom are happy with their experiences. They are primarily using the electronic mail and time management (agenda) software.

"We didn't look at it [Kontakt] as a microcomputer because we didn't have the software," Harrington stated.

"We looked at it as a local-area office mailing network type of application mainly on the communications and agenda side. That is what we brought it in under," Harrington said.

Kontakt's standard telephone features include autodial, display-based dialing, redialing, conference calling and speakerphone, which Harrington

referred to as "quite handy."

In their Statistics Canada configuration, the Kontakts are linked to each other and the Datapac trans-Canada time-sharing network as dumb terminals.

Harrington said he envisions a future cluster of 25 intelligent Kontakts linked through a private branch exchange communicating among themselves and the outside world at 300 bit/sec via the telephone system.

Harrington disagreed with Mitel's assertion that Kontakt is appropriate for use in the home. Using a Kontakt at home, he declared, would be comparable to buying a microcomputer to balance a checkbook.

Make the most of your assets.

Plan ahead. Project and compare your options. Do "what if's" for your particular set of conditions. And, get the full benefits of the Accelerated Cost Recovery System (ACRS) and your investment tax credits. All made simple, with MCBA's **Fixed Assets and Depreciation (A/D)** package.

Make the most of your assets—and your depreciation! Get MCBA's A/D package today.

MCBA

Mini-Computer Business Applications, Inc.
2441 Honolulu Avenue
Monrovia, CA 91020
Telephone: (213) 957-2900 Telex: 194188

Please send me FREE information about MCBA's **Fixed Assets and Depreciation** package for DEC®PDP®-11s: RT-11 ☐; RSTS/E ☐; Hewlett-Packard HP 3000 ☐; Wang VS ☐.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ ZIP _____

Phone (_____) _____ Please call me immediately. ☐

I am an OEM ☐; End user ☐; Consultant ☐; Other _____

CW1/24/83

SEE US AT SOFTWARE/EXPO
WEST
January 25-27, 1983
Moscone Center
San Francisco
BOOTH 521

Multiple Personalities 'Mapped' by Computer

By Marguerite Zientara
CW Staff

WASHINGTON, D.C. — Natasha is one woman with 127 different personalities or personality fragments. One day recently, as she sat quietly in a scientific laboratory here with electrodes wired to the top and back of her head, four of those personalities stared, one by one, at a strobe light that set off electrical signals in her brain. An electroencephalograph (EEG) recorded the signals transmitted by the electrodes and fed them to a computer for translation.

Out of the computer came different "maps" of each of Natasha's per-

sonalities — maps of brain wave patterns in different states of awareness, passive or during various cognitive processes.

Often sensationalized by the popular press, the disorder of "multiple personalities" has been decried by some mental health professionals as "faked" and "overdiagnosed." In the last few years, computers have helped prove its existence and are now helping researchers better understand and treat the phenomenon.

A leading researcher on "multiples" is Dr. Frank Putnam, staff psychiatrist for the Adult Psychiatry Branch of the National Institute of

Mental Health (NIMH), who is treating Natasha. Putnam is "mapping" the brains of as many multiples as possible with the Digital Equipment Corp. PDP-11-based Richard Coppola Brain Electrical Activity Mapping (RCbeam) system, named after its creator (see story below). The RCbeam system calls for flashing a strobe light in the eyes of a multiple and measuring the resulting electrical signals in the brain.

"The multiples I use in my research are aware they are multiples and can switch personalities on command," Putnam noted. "Very frequently there are personalities who

aren't aware of the existence of others within them."

Alternate personalities exhibit physiological differences said to be so profound that the syndrome cannot possibly be faked. Besides the brain waves, heart rate and blood pressure change with the personality, explained Putnam, who has compiled what is considered the most complete collection of statistics on multiples to date. He has found that:

- The brain waves of some alternate personalities of the same multiple vary as much as the brain waves from one normal person to another.
- Multiples can radically alter their voice patterns, accents and speech in ways experts consider unusual and once thought impossible.
- Alternates may have their own independent consciousnesses, intellects and memories.

Multiples — 90% of whom are women — have histories of "many years of being badly abused as children," Putnam explained. The abuse can be sexual or physical. Concentration camp victims have also been known to establish multiple personalities as a survival mechanism, Putnam noted, adding that most multiples are "very bright."

However, many victims of the disorder "have become reasonably successful while still multiples" and "at least half of all multiples who receive therapy can be cured within three to five years," Putnam noted.

How the Brain-Mapping System Works

WASHINGTON, D.C. — How does Dr. Frank Putnam of the National Institute of Mental Health (NIMH) "map" the brains of people with multiple personalities?

He uses a system designed in 1979 by Dr. Monte Buchsbaum, a neuroscientist formerly with NIMH, and Dr. Richard Coppola, a neuroscientist currently at NIMH.

The Richard Coppola Brain Electrical Activity Mapping (RCbeam) system is based on a Digital Equipment Corp. PDP-11 computer with a Matrox, Inc. black-and-white graphics display, Hewlett-Packard Co. 9876A printer/plotter and an electroencephalograph (EEG). Coppola

wrote the software for the system in assembler, Fortran and Pascal.

For each personality of a "multiple," Putnam relies on a strobe light to stimulate the brain and set off a minute electrical signal capable of being measured by EEG electrodes. The electrodes are placed in various arrays — called "montages" — on a patient's vertex (top of the head) and occiput (back of the head). "Each electrode can give you the voltage directly underneath it," Putnam explained.

Putnam then puts the voltages indicated by the EEG into a matrix and calculates, through a "least squares" data-fitting method, what the volt-

ages are over the rest of the subject's head.

His data is fed into the PDP-11 and what comes out are "the event-related potentials that are recorded off the scalp in response to visual stimulation," Coppola explained.

"That data is then massaged into a view of the brain" — a map — "either by coding it into a black-and-white gray scale or into a color display," Coppola continued. The map is an outline of the brain on a computer display "wherein each pixel is then gray-scale encoded to represent a particular amplitude of the response at [each] point on the surface of the brain."

Three Reasons System/Manager Stands Alone

No other DOS/VS(E) resource management system comes close to Corodale's System/Manager for overall ease of use and hardware efficiency. It's the complete resource manager. Because of three perfectly integrated components.

Space/Manager

Improves disk space and disk file control. Increases capacity by up to 50%.

Tape/Manager

Controls tape allocation and usage. Minimizes clerical time, ensures security and integrity.

JCL/Manager

Reduces job stream set up and maintenance. Streamlines operational efficiency and throughput.

In just 15 minutes, System/Manager can be up and running, paying for itself. And its modularity means you won't outgrow it, it won't outgrow you. We'll even let you prove all this in your own environment for a full 27 days.

Write or call for our Cost Analysis/Justification Worksheet and detailed information.

Offices in Boston, Chicago, Montreal. Also in London, Amsterdam, Dusseldorf, Helsinki, Sydney, Manila. TLX 710-3216747

C

Corodale
Incorporated

211 Congress Street
Boston MA 02110
617-426-8780

MELLONICS OFFERS
DISASTER BACKUP
IBM

DG USERS GET
DISASTER BACKUP

DISASTER BACKUP
FOR DEC-SYSTEMS

IBM Alternative
Computer Sites

**NOW: DISASTER BACKUP
FOR PRIME USERS!!**

PRIME COMPUTER DISASTER PROTECTION OFFERED BY PSI

For information and prices regarding Full-Service Disaster Protection for PRIME and PRIME Information Systems, as well as time-sharing.

CONTACT:



**PHOENIX
SERVICES INC.**

1762 Mass. Avenue
Lexington, MA 02173
617/863-5040

PRIME is a registered trademark of PRIME Computer, Inc., Natick, MA

'How Can We Help You?' Senate Panel Asks Vendor

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — Belying the electronics industry's impression that Capitol Hill policymakers undervalue its importance, Control Data Corp. President Robert M. Price was welcomed to a Senate finance subcommittee hearing last week with an earnest "tell us how we can help you."

Adding a strong note of urgency to the subcommittee's deliberations, the hearings began last Wednesday morning just as President Reagan was winding up meetings with Japan's newly elected prime minister, Yasuhiro Nakasone.

Appearing to discuss government policies to promote high-growth high technology industries, Price was repeatedly pressed by subcommittee chairman John H. Chafee (R-R.I.) for specific proposals to encourage high tech development. Price's major recommendation to the subcommittee could be summed up as "don't tie our hands."

Ambiguous Laws

In particular, Price called for legislation to remove the ambiguity of antitrust laws as they apply to cooperative research and development ventures by American firms. He pointed to the successful Magnetic Peripherals, Inc. joint venture and Microelectronics and Computer Technology Corp. (MCC), currently under development. MCC, comprised of 15 leading industry companies, got a qualified clean bill of health from the Justice Department's Antitrust Division just this month [CW, Jan. 17].

Despite the obvious need for R&D cooperation in the fast-paced computer and semiconductor fields, which face concerted, coordinated Japanese competition, Price remarked that "very little official guidance exists as to either what constitutes a lawfully structured joint R&D venture or what conduct will ultimately be considered lawful by the courts if challenged. Thus," he said, "participants in cooperative R&D ventures must proceed at their peril."

Price acknowledged that the prevailing attitude within the Justice Department and the Reagan administration as a whole is to promote such cooperation. But, he said, "a company interested in cooperation is deterred by ambiguity, uncertainty and great risk — all arising out of antitrust laws enacted in the economic context of the 19th century."

Support Legislation

The CDC president urged Chafee's Savings, Pensions and Investment Policy Subcommittee to support legislation introduced, in Price's words, to "clarify, not change, U.S. antitrust laws." The bills would do so by establishing criteria for organizing and conducting joint R&D ventures without fear of antitrust attack.

Price was asked by Chafee if there is anything else on the industry's "wish list," to which Price responded that CDC is concentrating on what it can do for itself and is not

counting on "favors" from Washington. He did, however, comment that recent tax law changes increasing R&D tax credits have been "particularly helpful in a down economy" and urged Congress to do all it can to ensure free international trade and equal access to overseas markets without resorting to protectionism.

Similarly, newly elected Rep. Ed Zschau, a Republican representative of Silicon Valley and former chairman of System Industries, Inc., a disk and tape storage systems maker, suggested the role of the federal government should be to develop "an entrepreneurial industrial strategy" that fosters innovative new firms.

IF YOU'VE GOT....CICS WE'VE GOT YOUR....COURSES

CICS/vs Concepts and Facilities	Jan. 27 Feb. 25
CICS/Command Level Programming.....	Jan. 31-Feb. 4 March 14-18
CICS/vs Application Design	Feb. 7-10 Mar. 21-24
CICS/vs Command Level Debugging	Feb. 23-24
CICS/vs Recovery/Restart	Feb. 7-9
CICS/vs System Problem Debugging.....	Mar. 8-9
CICS/vs Audit and Controls	Feb. 28-Mar. 2
VSAM Structure and Programming	April 18-21

TelTech has got them all... **PUBLIC**
IN NEW YORK CITY

For Registration & Information, call:

TelTech

at (212) 921-0250

548 Fifth Avenue, New York, NY 10036



The great impostor.

Most terminals live a very humdrum sort of life. They're purchased to shake hands with only one type of computer...doomed to go through life repeating one protocol over and over.

Our new Model 7 is more resourceful. We gave it loadable controls, so you can make it talk to almost any computer. Down line load or enter the control sequences you need from the keyboard...change it when you want to. If you need a dumb terminal, make it impersonate a Lear Siegler, a Televideo, a Hazeltine, or a DEC. Need a smart terminal? Tell it to be an older model Teleray, an IBM, or an HP. The Model 7 is so crafty, your computer will never know the difference.

The Model 7 is a lot more than just a great impostor, too. It gives you Teleray's exclusive HOT BUTTONS™ so you can redefine the keyboard to meet

your preferences and special applications. Its non-volatile programmable memory lets you recode any of thirty-two keys to execute the special characters, sequences, or functions you need.

The super-smart Model 7 gives you full editing capability. 25-lines x 80-columns. ANSI X3.64 and an alternate user definable ASCII compatibility. Two (optionally four) user configurable display pages. Horizontal and vertical smooth scrolling. Scientific notations. Line and mosaic graphics. Standard and oversized characters, and much more. We even taught it how to play music, so you can alert, remind, or reinforce the operator with flair.

Call 612-941-3300 or write for more information on The Great Impostor...it does what other terminals only dream about.

**The Model 7.
An undisguised
advancement.**



TELERA
DIVISION OF **RESEARCH INC.**
BOX 24064 MINNEAPOLIS, MINN. 55424

NSF Calls for National Supercomputer Effort

By Jake Kirchner

CW Washington Bureau

WASHINGTON, D.C. — A National Science Foundation (NSF) panel has called for a federally coordinated national program to stimulate U.S. development and use of supercomputers.

Stating that "U.S. leadership in supercomputing is crucial for the advancement of science and technology and therefore for economic and national security," the 15-member panel of scientists and engineers warned that large-scale computing in the U.S. may be eclipsed by Japanese research and development efforts by the end of the decade.

The NSF report, issued last week, stems from a workshop on supercom-

puting held last spring under the auspices of the foundation and the Defense Department. The panel, formed as a result of the workshop, said large-scale computing is "a vital component of science, engineering and modern technology, especially those branches related to defense, energy and aerospace."

Nonetheless, the report noted the slackening of U.S. government support of supercomputer R&D during the 1970s and concluded that "there is a distinct danger that the U.S. will fail to take full advantage of [its historical] leadership position and make the needed investments to secure it for the future."

The panel cited two major problems: access to supercomputers,

which the report called "inadequate in all disciplines," and the uncertain outlook for U.S. development of the next generation of supercomputers.

"The capacity of today's supercomputers is several orders of magnitude too small for problems of current urgency in science, engineering and technology," the report said. "Nevertheless, the development of supercomputers, as now planned in the U.S., will yield only a small fraction of the capability and capacity thought to be technically achievable in this decade."

The NSF panel said the American computer industry's supercomputer R&D effort "reflects competitive commercial conditions" and not "the entire national scientific and security

interest." Therefore, "it is not reasonable to rely solely on industry's own initiatives and resources in this area."

The panel noted the supercomputer development programs of France, West Germany, the UK and especially Japan, whose government-sponsored supercomputer project seeks to develop by 1989 a machine 1,000 times faster than current supercomputers. One fear is that if the next generations of supercomputers come not from American firms but from foreign organizations, next-generation U.S. scientific and military computing needs may go unmet.

Therefore, the NSF group recommended a four-element national program, supported by a system of computer networks linking government, industrial and university scientists and engineers, to foster R&D and expanded use of advanced computer technology. The four components of the proposed program are:

- "Increased access for the scientific and engineering research community through high bandwidth networks to adequate and regularly updated supercomputing facilities and experimental computers."

- "Increased research in computational mathematics, software and algorithms necessary to the effective and efficient use of supercomputer systems."

- "Training of personnel in scientific and engineering computing."

- "Research and development basic to the design and implementation of new supercomputer systems of substantially increased capability and capacity, beyond that likely to arise from commercial requirements alone."

The NSF report said the program should be coordinated within the federal government by an interagency policy committee assisted by an interdisciplinary advisory panel. The program will not be successful without funding exceeding the current U.S. level of supercomputer R&D expenditures, the NSF panel added.

For more security, convenience, throughput, and cost savings, Tri-Data's Total Network Modem.

The security of the network. The productivity of the people who use it. And the cost of maintaining and enhancing it. Those are the criteria by which the Communications Manager must measure the value of the so-called "super modems." And against those criteria only one really measures up: Tri-Data's 212A-compatible OZ 225, the Total Network Modem.

More Security.

The OZ 225 features an exclusive "Triple Lock" security system that gives you unparalleled control of your network. True 1200-baud downline loading lets you instantly change passwords, limit directory and display access—in effect, get virtual private line security in a public network. No other modem even comes close.

More Convenience.

The OZ 225 Network Modem boasts the most comprehensive set of automated and user-friendly features available today. Once its multiple directories are created and linked, a simple command dials the number, logs you on, and verifies the response, without tying up either the operator or the computer. Call abort, retry and alternate number dialing are also totally automatic. OZ 225 can store up to ten times the numbers of any competitor. And because it is compatible with non-Bell as well as 212A environments, connection through intermediate networks like MCI and SPRINT® is hassle-free.

More Throughput. More Savings.

The OZ 225 is the most powerful network modem you can buy. Which means, bottom line, it's the most economical network modem you can buy. Twin

microprocessors, 16K of battery backed-up memory, up to 9600 baud to and from the DTE, bi-directional speed buffering, and Flow Control all translate into faster system throughput and greater staff output. Displays come up more promptly. You get on and off the computer more quickly. You save on dial-ups, minimize screw-ups and free up expensive CPU and phone line resources.

Try Tri-Data's new OZ 225, the Total Network Modem, because it interfaces efficiently with any network node—for more security, convenience, throughput and cost savings.

For more information,

Fill out this coupon and send it to us at:
Tri-Data, 505 E. Middlefield Road,
Mountain View, CA 94043

____ I'll try one for 30 days. Send details.
____ Have a Tri-Data rep call me.
____ Please send me more information.

NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____



TRI-DATA

505 E. Middlefield Road
Mountain View, CA 94043
(415) 969-3700

SPRINT is a registered trademark of Southern Pacific Communications Co.

CSC Loses Appeal In Supreme Court

WASHINGTON, D.C. — The U.S. Supreme Court has refused to overturn indictments against Computer Sciences Corp. (CSC) and several present and former CSC employees charged with defrauding the federal government in connection with a large 1972 DP services contract.

The indictments, handed down in 1980, charged among other things that the huge Infonet contract had been won by bribing a federal procurement officer. In 1981, the charges were thrown out by a federal court in Virginia, but most were then reinstated by an appeals court last summer [CW, June 28].

Because the defendants were unsuccessful in seeking a Supreme Court review of the reinstatement of those indictments, the case will go back to trial in the federal court in Alexandria, Va., probably within the next few months, according to the Justice Department.

Introducing... Datapro Reports on TELECOMMUNICATIONS



The industry's complete source of information keeps you current and competitive, helps you plan, analyze and manage a more cost-effective telecommunications system



Your subscription includes:

- Free, unlimited use of Datapro's Telephone Consulting Service
- Two loose-leaf volumes—over 1000 pages
- Twelve monthly supplements for continuous updating
- Twelve monthly newsletters on industry highlights

Now—at last—a complete information source to help you plan, analyze and manage a more cost-effective telecommunications system. There are over 1000 pages of the most current industry information available in the newest Datapro reference service—all the facts, figures, market profiles, examples you need to make the right decisions to keep current and ahead of the competition.

Naturally, this new information reference service is from Datapro Research Corporation, the world's largest publisher of reports, analyses, ratings and news about data processing, data communications, and office automation products and services.

The Datapro staff of experts has brought the combined efforts of editors, contributors and longtime telecommunications industry watchers to create a truly unique reference tool—*Datapro Reports on Telecommunications*, the seventeenth in a series of comprehensive reference services. *Datapro Reports on Telecommunications* will give you instant access to new prices, products, reports, methods and facts about the dynamic \$75-billion telecommunications market. Here, indeed, is the essential tool you must have if you are to make an intelligent decision on telephone systems, products and services.

RESULTS-ORIENTED. The bottom line is to improve company profitability, and one way to realize this goal is through more cost-effective telecommunications. With this new reference tool you'll be able to make more informed, supportable decisions and turn your telecommunications system into a profit center.

COMPREHENSIVE. Even if you read everything about telecommunications, you couldn't possibly remember it all. Datapro remembers for you. What about that new facsimile system? The latest government ruling? The latest on that hottest of hot topics—electronic mail? This two-volume reference service has it all—over 150 reports, and reviews of more than 200 systems and specialized systems, over 80 facilities and over 75 peripheral devices—all in one, comprehensive source.

OBJECTIVE. As with all Datapro reference services, *Datapro Reports on Telecommunications* is completely unbiased and nonadvertising-supported.

So you can depend upon frank user opinions on the performance of PABX systems, key systems, telephone management systems and more.

These detailed user ratings and comparison specifications are provided for telecommunications products, systems, services and related EDP and MIS services.

CONVENIENT. All of this information in two hardcover, loose-leaf volumes is organized to be used again and again by telecommunications-oriented staff and managers at all levels. You are guided step-by-step through dozens of problem-solving processes. So you can discover the "who, what, where, why, and how" of new vendors, products and services, new techniques, trends and technologies. Then you can discover new ways to use them to your best advantage.

CURRENT. *Datapro Reports on Telecommunications* is updated every 30 days with over 100 pages of the newest prices, products, reports, methods and facts. You also receive a monthly newsletter that reviews and summarizes industry highlights. And if you need more information on a specific topic, you have unlimited access to our Telephone Inquiry Hot Line Service. This individual hot line answers your latest questions and puts the world of telecommunications at your fingertips. All of this is included with your subscription.

ESSENTIAL. *Datapro Reports on Telecommunications* is your authoritative source to the best and newest information about suppliers, consultants, new products, services, applications, and how to use them. *Datapro Reports on Telecommunications* unlocks the door to the big picture. Observe how the various technologies and systems involved in different aspects of the industry fit together. Prepare yourself to capture the opportunities of the rapidly-changing telecommunications industry.

An important new reference source for:

- Telecommunications Managers
- Operations Managers
- Office Automation Specialists
- Systems Planners
- Facilities Managers
- EDP/MIS Directors

Every aspect of the telecommunications industry is explored in detail!

Two ways to order!

1. Order by Mail.

Simply fill in this convenient coupon and mail. Enclose your check, or we will bill you later.

2. Order by Phone.

For fastest service, use Datapro's 24-hour TOLL-FREE "hot line"

800-257-9406

In New Jersey call 609-764-0100.

SPECIAL

PREPUBLICATION OFFER!

Review this information service on a **10-day, no-risk right-of-return** basis, and save \$50 off the regular subscription price.

Reserve your copy now at the prepublication price of \$395 **before** it comes off the press in March.

datapro

DATAPRO RESEARCH CORPORATION
1805 Underwood Boulevard
Delran, New Jersey 08075



☐ Yes, please reserve my copy of the new, informative *Datapro Reports on Telecommunications* at the prepublication price of \$395. I understand that if this service is not all I expected it to be, I may return the volumes within 10 days and pay nothing.

☐ Please have a sales representative call me with additional information.

☐ Send me more information on this newest Datapro service as well as on all Datapro services.

☐ Check enclosed

☐ Bill my company and add handling charges if applicable.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone number () _____

A

Communications Chiefs Seen Under the Gun

By Bob Johnson

CW New York Bureau

NEW YORK — AT&T's divestiture of the Bell operating companies will initially cause a degradation of data communications service, pushing DPs to "jump down the throats of telecommunications managers."

That prediction came from Michael Kanthal, New York chapter chairman of the Association of Data Communications Users (Adcu), who spoke at a recent meeting addressing what the AT&T breakup will mean to data communications professionals.

Because telecommunications managers now deal with a number of different companies in the event of a communications problem, Kanthal said, data transmission will suffer because of lost time and added confusion when the Bell divestiture becomes effective. "Not only will data communications professionals have to figure out which company to go to concerning communications issues, but AT&T and the Bell companies themselves are going to have to sort out which company has responsibility for what," he pointed out.

Kanthal said he personally spoke to AT&T and New York Bell representatives prior to Jan. 1, and neither one knew what their specific responsibilities would include.

The speaker offered a typical data communications scenario as an example of what telecommunications managers can expect: "Say, for instance, that your company needs to transmit data from New York to Boston. You're not going to have your local area loop [lines, which connect AT&T Long Lines to the user site], the AT&T circuit or the New England area loop taken care of by one company anymore. Each will be separate, and you'll have to deal with

each individually.

"Additionally," Kanthal observed, "if your hardware is from a different vendor, another company has to be called in. The creation of American Bell further confuses hardware matters."

Moreover, the engineering coordination involved in such a task will create additional work for telecommunications professionals if they do not want AT&T service at an additional charge. "Simply stated, you are going to need more bodies to get the same job done."

In addition to these problems, Kanthal noted that the divestiture will have a "trickle down" financial impact on companies. "As a manager at Nabisco said, 'If the price of my

phones go up, I raise the price of my cookies.'"

Degradation of Service

All of these factors will take their toll on the DP manager as well as the communications manager, according to Kanthal, who noted that a degradation of communications service is sure to hit DP shops with a noticeable lack of efficient "uptime." It will directly affect on-line systems.

"DP managers will have to sit down with data communications managers and spend time learning what impact this breakup is going to have on communications lines and data transmission, so major interruptions can be avoided. A joint plan to reduce the negative impact from

both the computer operations and network areas should be mapped out," Kanthal advised.

Part of this planning will mean that DP managers will be requesting more money for their budgets so they can hire the needed additional people. Kanthal called this another annoyance created by the new communications arena.

Although Kanthal painted a disturbing picture of the future of data communications, he did note that it has a bright side: "The divestiture has forced data communications and the telecommunications manager to become more visible within companies. And because there is more work to be done, more jobs will be available."

Author to Speak At ICCCM Meet

NEW ORLEANS — Prof. Ben Schneiderman of the University of Maryland will keynote the Fifth Annual International Conference on Computer Capacity Management (ICCCM), which will be held here April 18-21. Author of the recently published *Software Psychology: Human Factors in Computer and Information Systems*, Schneiderman will address "The Psychology of Serving the User Community."

Schneiderman will examine the concept of human performance in using computer and information systems. He reportedly will describe techniques to enable data center managers and management information systems directors to improve the human aspects of computer systems, so as to produce greater user productivity and satisfaction.

The conference is sponsored by the Institute for Software Engineering, the data processing education, publishing and research organization. The general registration fee is \$445. The fee for members is \$345, for speakers, \$245, and for university faculty members, \$150. Further details are available from Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

LEASING COULD BE YOUR BEST BUY.

Why put off sharing in the benefits of color graphics? Leasing can bring the highly-rated Ramtek 6211 Colorgraphic Terminal into your office or plant without the delay and constraints of capital expenditure budgeting and approval cycles. Not only do you avoid the heavy out-of-pocket expenditures of purchase, the

leasing charges are deductible and you get an automatic hedge against equipment obsolescence —while freeing up your working capital for other needs. You couldn't ask for a better buy than that!

The Ramtek 6211 Colorgraphic Terminal is a compact, easy to use unit, ideally suited for desk-

top environments. Its high resolution images, powerful color manipulation capabilities and ability to use a wide variety of third-party software make it ideal for an extremely broad range of applications. Put these features together with its low price and you'll know why the Ramtek 6211 Colorgraphic Terminal is the

N.Y. Bank Trying New Ways to Fire Up DPer

By Bob Johnson
CW New York Bureau

NEW YORK — Just as American corporations are turning to their management information systems (MIS) divisions to help cope with economic dilemmas, the MIS divisions are turning to their staffs for better productivity.

But DP productivity is for the most part intangible, making it difficult to measure a worker's output, observed Bruce Schultz, assistant manager for human resources in the Operations Division of Manufacturers Hanover Trust Co. here. "It's not like you're doing time studies on an assembly line. It's hard to tell if the DPer is using all of the resources available to him or if he is truly hap-

py the way things are being done in his area."

Complicating that problem, Schultz pointed out in a recent interview, is the traditional perception of DPer as mavericks within the corporate structure who are generally left alone to do their "mysterious" jobs.

For those reasons, Manufacturers is implementing measures to make its DPer more aware of the job improvement opportunities within the company and help them feel that they are contributing to the overall good of the company. "We have a Special Systems and Programs Subcommittee of the company's overall Human Resources Productivity Committee, which specializes in the needs and problems of the DPer,"

Schultz said. "This group looks at the computer side of our Operations Division to see just what can be done to make people more efficient and satisfied in their jobs."

The subcommittee is also studying alternate types of work situations. A work-at-home pilot project that is being planned would allow both full-time and part-time DPer to work on projects at remote sites. "In situations where, say, 12 extra people are needed for a special job, a project like this can help us determine if work-at-home is feasible," Schultz maintained.

Another project undertaken by the subcommittee is a business systems strategy plan. Schultz said that this project addresses the allocation

of the system and program group resources, attempting to link them with the business strategies of the company's user groups.

The outcome of such a project gives both sides a common goal, preventing people who aspire to the same thing from going off in different directions. "The DPer sees his work being applied to a project with a set goal. It's not just an anonymous program being installed as part of a greater system anymore. This enhances his professional identity," Schultz said.

"DPer are a bit more complex than the average employee, but they are still people," he added. "Productivity awareness pulls DPer back into the group. It shows them the things they can accomplish. And DP management once again recognizes that their employees basically want what all employees want — satisfaction and management recognition."

LEASE
THE BRILLIANT
RAMTEK 4100
MULTICOLOR
PRINTER.



LEASE THE
HIGH-PERFORMANCE
RAMTEK 6211
COLORGRAPHIC
TERMINAL.

What Boosts Worker Morale?

NEW YORK — Just what are DP managers doing to boost the morale and productivity of their employees?

United States Trust Co. of New York encourages camaraderie among its workers. Vincent Stendardo, operations manager for the company, has seen many different changes in technology and personnel during his 15 years at U.S. Trust. The one theme that runs throughout all successful operations, he said, is workers working together to achieve a goal.

"If there isn't a pleasant working atmosphere where people get along and assist each other, things will not be accomplished smoothly," Stendardo said. "Basically, it's just human nature. People are more productive when they are happy."

U.S. Trust has some physical plans to try to boost productivity. It expects to install an automated job scheduling system and an automated tape management system to assist operators.

The most effective motivator, according to another New York DP executive, is competitive salaries. But, according to Ed Kahn, director of DP for New York's Mount Sinai Medical Center, "the key to productivity anywhere is good communication. You can't have people worrying about nonissues; they have to have their minds clear to get the job done."

"Good management-employee communication gives people the feeling that they are part of departmental goals and objectives. In this way, they have a chance to air gripes, identify problems and endorse what they feel is important so things don't come as a surprise later on."

A DP manager for a large New York-area manufacturing company who asked to remain anonymous said that a productivity issue of paramount importance is the competency of workers. More time and money is wasted on people who really do not know how to do their jobs the way they should be done, he said. He attributed that to either poor hiring practices or faulty management.

ideal choice.

For hard copies, there's the Ramtek 4100 Colorgraphic Printer. This sophisticated unit delivers crisp, multicolor paper copies with such economy that color hard copies need no longer be a luxury. You can put it to work every day for reports, plans, and meetings.

Let Ramtek bring some color into your business. To see exactly how leasing the 6211 Colorgraphic Terminal or the 4100 Printer can be a "best buy" for your company, call the Ramtek office nearest you. Or contact us at 2211 Lawson Lane, Santa Clara, California 95050. (408) 988-1044.

Ramtek

OUR EXPERIENCE SHOWS

World Headquarters—Santa Clara, CA.
European Headquarters—Ramtek Europe BV,
Meidoornweg 2, 1171 JW Badhoevedorp, The Netherlands.
Regional offices—Dallas, TX; Santa Ana, CA; Seattle, WA;
Schaumburg, IL; Houston, TX; McLean, VA; Denver, CO;
Cleveland, OH; Rochester, NY; Maitland, FL; East Brunswick,
NJ; Boston, MA.

IC4GL Conference Set for April 21

ANN ARBOR, Mich. — Database Design, Inc. will hold a conference here on "Information Centers and Fourth Generation Languages" (IC4GL) April 21-22 in association with the University of Michigan Graduate School of Business Administration.

IC4GL is geared toward helping senior managers make strategic decisions

about the use of information centers and fourth generation languages within their environments. The conference will focus on user experiences to provide senior DP and general managers with an understanding of benefits, potential pitfalls and key success factors in the acquisition and use of these technologies.

Guest speakers will include author James Martin, head of Database Design; Dr. Dixon Doll of the DMW Group; Rick Crandall of Comshare, Inc.; and Ed White of IBM.

The registration fee for the conference is \$1,000. More information is available from Database Design at 2020 Hogback Road, Ann Arbor, Mich. 48104.

Feb. 24 Meet to Address Performance Management

SCOTTSDALE, Ariz. — The Fourth Annual Conference on Electronic Data Processing Performance Management, sponsored by Applied Computer Research, Inc. (ACR), is slated to take place here Feb. 28-March 4.

This conference will focus on the productivity of human and machine resources in serving user needs, with

primary attention on managerial aspects. Topics to be covered include DP/user relationships, communicating with management on performance issues, long-range and capacity planning, problem/change management and interpersonal communications.

Registration for ACR clients is \$525 and \$600 for nonclients. More information can be obtained from ACR through P.O. Box 9280, Phoenix, Ariz. 85068.

Nucon Meet Set for April

KANSAS CITY, Mo. — The 1983 NCR Corp. User Conference (Nucon '83) will be held here April 24-27. This year's theme is "Information Management: The Bottom Line."

Six concurrent tracks will provide 66 sessions at the conference. Major speakers will include William Anderson, chairman and chief executive officer of NCR, and Dr. Gerald Bell, professor of organizational behavior at the University of North Carolina's School of Business.

Registration for Nucon '83 is \$290 before March 15. Further details are available from the Federation of NCR User Groups, Mail Station SDC-2, Dayton, Ohio 45479.

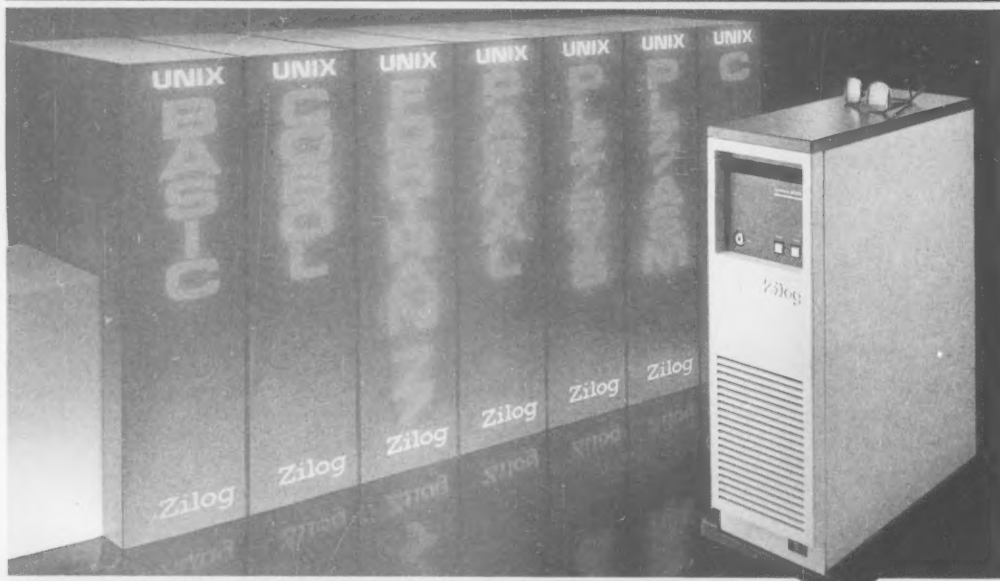
Houston ICCA To Hold Seminar

HOUSTON — The Houston Chapter of the Independent Computer Consultants Association (ICCA) will co-sponsor a seminar titled "How to be a Successful Computer Consultant," here Feb. 12.

Led by Walter E. Ulrich of Walter E. Ulrich Consulting, the seminar will discuss the development and management of a computer consulting practice.

Registration for this event is \$95. Further details can be obtained from Steve Glasgow at Walter E. Ulrich Consulting, Suite 450, 2626 South Loop W., Houston, Texas 77054.

Zilog's new System 8000 speaks seven languages. Fluently!



Now, there's a microcomputer that speaks seven high-level languages at a price that won't leave you speechless.

The Zilog System 8000 Model 11 is a general purpose, time-sharing computer that features the powerful UNIX* operating system, with enhanced System III capabilities. It is especially attractive to OEM's since all the software needed to make programming more productive is of the highest quality, and is accompanied by superb documentation.

For example, commercial users can select from high-level COBOL and BASIC business languages; systems programmers can select C, Z8000 assem-

bler and PLZ/SYS; technical users can opt for FORTRAN 77 or Pascal. Inside the Model 11 are the high performance VLSI components you've come to expect from Zilog. Each 8-user system is equipped with 256 KB of parity memory and an 18 MB Winchester disk for on-line storage. Optional ECC memory and additional disk storage capacity are offered. We also provide clear, easy to follow manuals, comprehensive training and dependable field technical support.

Zilog's new System 8000. Priced at just \$14,950, it's the powerful entry level system that speaks like a mini for micro prices.

To find out more about the System 8000 product family, call our toll-free number 800-841-2255. Ask for your free copy of the Zilog "Blueprint for Success" kit and poster. The kit contains detailed information about Zilog's unique OEM opportunities.

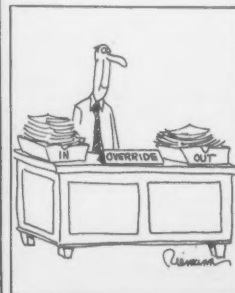
INTERNATIONAL
Paris 33-1-0163 Munich 89-612-6046
London 44-0628-39200 Tokyo 03-587-0528

*UNIX is a trademark of Bell Laboratories. Zilog is licensed for System III by Western Electric, Inc.

Zilog

Pioneering the Microworld.

An affiliate of EXXON Corporation



No Recession for This DPer As Hughes Plays Catch Up

By Robert Batt

CW West Coast Bureau

LOS ANGELES — For Chuck Bates, manager of systems and operations at Hughes Helicopters, Inc., the past 12 months have held no evidence of recession. Instead they have been the most frenetic period of change and expansion in his varied 16 year career as a DP professional.

"In the last year we have trebled our CPU capacity, increased our disk storage by about 60%, doubled our printing capability and added 120 CRTs," said Bates, adding, "We have been overwhelmed by what is going on. All you can do is keep people reassured that we have an overall plan and we know where we are going."

Bates joined Hughes Helicopters after working for 11 years at Dart Industries, where he held the position of systems programming manager at the time of his departure. He spent the four years before that working as a systems programmer at IBM.

Playing Catch Up

"Hughes Helicopters is a company that is trying to play catch up," Bates said in a recent interview. "For a long time it was seen by some people simply as a hobbyhorse for the Howard Hughes empire. Now we are trying to develop into a fully mature company, which means providing a tremendous amount of user-friendly DP tools for senior management."

Hughes has benefited from the Reagan administration's push to increase the nation's defense capabilities, which has ushered in a period of tremendous growth for the company. For example, Bates was one of several new managers when he joined the company just over a year ago. "No one was in their present management job 18 months ago. Approximately 60% of the managers are new to the company and the rest switched to new job classifications," he noted.

Those wholesale changes in management came with problems. "We were faced with a need to get a team effort going and to integrate our different management approaches, so there were a lot of human engineering problems to confront," Bates recalled. But, "at the same time, the mass of new faces allowed for some fresh thinking to be injected into the company."

Bates decided the best approach would be to "jump in with both feet and pray I was right." Bates, who had managed five systems programmers in his last job, had to learn how to manage 55 people of diverse backgrounds in areas such as computer operations and telecommunications, where he had little hands-on experience.

Moreover, "I was immediately confronted with a shortage of personnel in computer operations. Capacity planning and performance analysis functions were not in place. My job was to bring these things together and make them operational."

Among the changes Hughes has overseen in the past year are:

- A major software environment change to an IBM telecommunica-

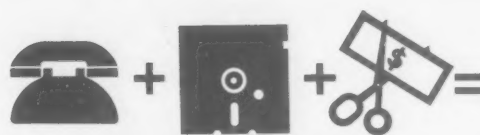
tions package, the Multiple System-Network Facility.

- The implementation of new modeling, graphics and reporting packages.

- A switch in printing systems from a Honeywell, Inc. Page Printing System to two Xerox Corp. 9700 machines.

- The addition of a new scanner and storage lines to the company's IBM 3705 telecommunications controller.

In addition, Bates is planning to replace his Amdahl Corp. 470V/8 and IBM 3031 mainframes with faster processors from the same two companies.



THE FRIENDLY COMMUNICATOR

© BIRKBEER ASSOCIATES 1982

A Plug for IBM

SSI printer system expertise gives you total IBM plug-and-go compatibility...

and saves you about 50%

The SSI connection is all you need to do everything IBM printer systems can do (and a lot they can't) for a lot less money.

For instance, our QT1130-05 printer (illustrated) and its controller are plug-compatible with all IBM mainframes. Compared to the 3203-Model 5 the system provides 20% higher throughput. Speaking of controllers, our 32/5 can drive longline printers (up to

2500 feet) off the channel—better than 10 times IBM's distance.

We have other unique solutions in the IBM world, too, for System 34, System 38 and you name it. Such as driving four printers from one control box. Or generating remote output in parallel mode (our 9135 Converter) so that remote printers appear local to the processor. In serial communications, we offer full compatibility with 2780, 3780 and 3270 Type A&B protocols.

SSI quality is proven by seven years in the field. We lead in speed, too: our new Mercurion 1 non-impact printer goes 5280 lines a minute. As for service, we now offer the SSI team of specialists plus the full clout of TRW. So there's no reason to hesitate. Call us or mail the coupon for the full story.

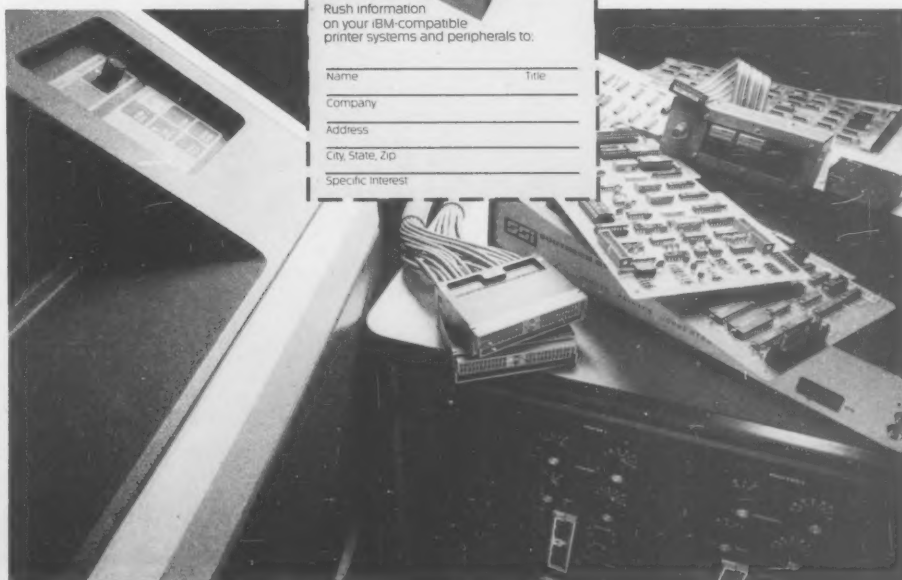
SSI Southern Systems, Inc.

2841 Cypress Creek Road
Ft. Lauderdale, FL 33309
(305) 979-1000 (800) 327-5602
TELEX 522135



Rush information on your IBM-compatible printer systems and peripherals to:

Name _____ Title _____
Company _____
Address _____
City, State, Zip _____
Specific interest _____



Stanford Gets Top Grade in Grad School Poll

WASHINGTON, D.C. — Stanford University, MIT, the University of Illinois and the University of California at Berkeley have the best reputations of all graduate educational institutions in the field of computer science, according to a recently released survey.

The survey, "An Assessment of Research-Doctorate Programs in the United

States," ranks the top 10 graduate institutions in 32 academic fields in terms of reputation and faculty publications. The reputation ratings were drawn from surveys of 5,000 faculty members at 228 colleges and universities. The publications category rates the colleges according to the number of articles published by members of the department.

The top 10 institutions in the field of computer science in both categories are:

• **Reputation:**

1. Stanford University.
2. MIT.
3. Carnegie-Mellon University.
4. University of California at Berkeley.
5. University of California at Los Angeles.
6. University of Illinois.

7. University of Washington.
8. University of Southern California.
9. University of Texas.
10. University of Wisconsin.

• **Publication:**

1. University of Illinois.
2. University of California at Berkeley.
3. MIT.
4. Stanford University.

5. University of California at Los Angeles.
6. University of Southern California.
7. Ohio State University.
8. University of Maryland.
9. University of Minnesota.
10. University of Wisconsin.

Officials stressed that the study rates the programs on the basis of their success at turning out scholars. It does not attempt to rate their value to private industry.

The survey was sponsored by the Conference Board of Associated Research Councils, a coalition of the American Council of Learned Societies, the American Council on Education, the National Research Council and the Social Science Research Council. It follows up on similar studies published by the American Council on Education in 1968 and 1970. This was the first time the computer science field was included.

The terminals that face up to everyone's problems.

Now Qume offers a line of three CRT terminals that help you face every one of your company's needs: The Qume QVT₁₀₀ series.

The low-cost Qume QVT 102₁₀₀ has all the best features of the four most popular terminals and can emulate all four with a keystroke! QVT 103₁₀₀ is code-compatible with the DEC VT100/VT 131 and offers 80 or 132 character/line, split screen and up to 4 pages of memory. And QVT 108₁₀₀ faces up to the most demanding jobs with 22 function keys, 13 editing functions and 2 pages of memory.

Qume QVT terminals all share striking ergonomic design. Tilt/swivel screens in green or amber. Detached, low-profile keyboards. Big 9 x 12 character cells. And a long list of other features to make people more comfortable and productive.

Best of all, Qume QVT terminals are very competitively priced. You can have performance, features and reliability without facing a budget problem.

Talk to your Qume sales office about filling all your terminal needs with a single purchase of QVT terminals. Or write Qume, 2350 Qume Drive, San Jose, California 95131.



One size fits all.

Qume.
A Subsidiary of ITT

QUME CORPORATION

HEADQUARTERS

2350 Qume Drive
San Jose, CA 95131

CALIFORNIA

San Jose (408) 995-6144
Culver City (213) 410-1458
Santa Ana (714) 957-4040

COLORADO

Aurora (303) 752-3000

ILLINOIS

Palatine (312) 991-7250

OHIO

Dayton (513) 439-0469

TEXAS

Irving (214) 659-0745

NEW JERSEY

Edison (201) 225-5005

MASSACHUSETTS

Bedford (617) 275-3200

GEORGIA

Dacula (404) 284-8500

GERMANY

Düsseldorf PH: 211743016

ENGLAND

Reading, Berkshire

PH: 734-584-646

FRANCE

Boulogne PH: (1) 6082334

CANADA

Quebec PH: (514) 695-3837



Fose '83 Slated For March 14

WASHINGTON, D.C. — Based on the theme "Office Systems Integration: Myth or Reality?", the Federal Office Systems Expo (Fose) '83 is slated to take place here March 14-17.

The conference will host 61 sessions, including one by industry guru James Martin. The concurrent exposition will showcase product offerings from some 150 vendors.

Early registration for the full conference costs \$225, and one-day-only registration is available. Further details can be obtained from Fose '83 sponsors at National Trade Productions, Inc., Suite 206, 9418 Annapolis Road, Lanham, Md. 20706.

For CICS/DOS/VS(E) Inter-Partition Command Processor (IPCP)

IPCP opens and closes CICS files from batch partitions with a single execute statement.

Other features:

- enable/disable transactions
- write transient data
- open/close extra-partition datasets
- initiate transactions
- open/close/switch dump datasets
- user-program interface

Get these important benefits:

- increase batch throughput
- eliminate PAUSE statements
- avoid costly reruns
- protect files
- keep CICS up 24 hours
- minimize time file offline
- fully documented/supported
- free 30 day evaluation period
- low cost of \$950 one time lease or \$48 mo.

J. W. LAMPI, INC.

For Quality Software Products

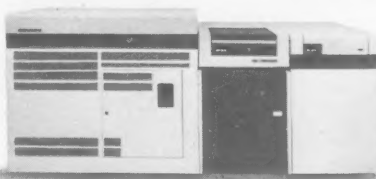
6160 Benjamin St. NE

Minneapolis, MN 55432

(612) 571-3934

Only Wang VS computers have the intelligence to get you into office automation.

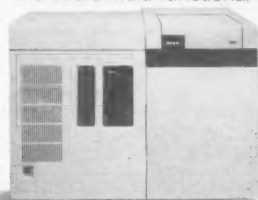
When you buy any Wang VS (Virtual Storage) computer, you're not just buying another computer. You're buying a flexible, powerful, computer system that's compatible with most mainframes and offers multi-functional capabilities no one else can touch.



Wang
VS 100

Along with data processing and electronic mail, you can get Wang Word Processing, the world's standard. And when you consider that 80% of the information handled in most offices is in written form, that's no small extra.

But more than that, you get the only computer system that has



Wang
VS 45

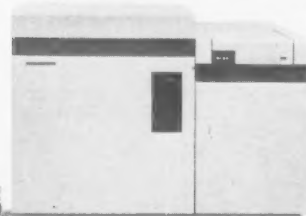
the built-in capability to automate your entire office. A system that's expandable, upgradable, and

compatible from low to high end. And because most VS systems run under one operating system and support the same software, it's the world's easiest system to learn and to use.

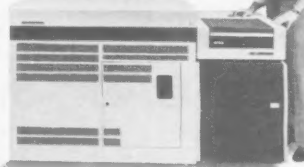


Wang
VS 25

The Wang VS. When you consider all you get, and what you get it for, why consider anything else?



Wang
VS 80



Wang
VS 90

For a demonstration of the Wang VS computer, call

1-800-225-9264

Or send this coupon to:
Wang Laboratories, Inc.
Business Executive Center
One Industrial Ave., Lowell, MA 01851

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

WANG

The Office Automation Computer Company

Trace Package Helping to Teach Assembly

BOISE, Idaho — It is more difficult to teach assembly language programming than any other language, basically because it requires handling a lot of details. These details can overpower a novice programmer.

However, once a person is experienced at programming, use of assembly language provides greater flexibility. With this rationale in mind, the Idaho Transporta-

tion Department here set out to find and train new assembly language programmers. A training class was set up and 16 state employees were selected to attend.

Joel Gyllenskog, a general partner with Packaged Software of Idaho here and a former university professor, was chosen to teach the course. He decided to enlist the help of a computer and selected Psitrace, a software

package from his firm, to monitor the execution of the students' programs.

The trace program shows each assembly language instruction as it is executed. The trace includes the hexadecimal code, the disassembled instruction (including mnemonic and decimal equivalents of the fields), the condition codes and the registers, which are modified by the execution of the instruction. For instructions that access the computer's memory, the contents of the affected cells are also printed.

One training technique

Gyllenskog used successfully was to provide sample programs to the students for modification or enhancement. By seeing how the original instructions worked together, the students were able to see where the changes needed to be made. He explained that by tracing their modified programs, students could quickly see if the changes they had made affected the desired results.

"Very often it was back to the drawing board," he noted, adding that the rapid feedback allowed successful results sooner, so that more

material could be covered and understood.

"Traces, such as the one used in this class, are helpful since they show details which may otherwise be overlooked," Gyllenskog said.

Although the class is over, the trace is still used. Both the trainees and the veterans use it. "Illusive bugs in assembly code, Cobol, Fortran and even third-party software packages are tracked down," he noted. "Once the problems are isolated, the solution usually follows easily."

Unit Set Up to Aid Disabled In Selection of Computers

NORTHVILLE, Mich. — With the widespread use of computers as aids to the handicapped comes the problem of choosing the computer that is right for a particular individual.

The Handicapped's Source, a division of Intelligent Consumer Electronics (ICE) here, has been established to help solve that problem. The Handicapped's Source provides sales and distribution for computer products and services for the handicapped.

The first step in its process of aid is to help the disabled understand how computers can help them and eliminate any fears they might have about the technology. "The sophistication of computers these days can be frightening to people who don't understand how they work," observed ICE director James Abbey.

"Our goal is to help the disabled in their daily functions, help them become more productive and valuable in employment and help in the diagnosis and treatment of the disability," he continued.

ICE offers products, services and customization of

products to suit individual needs. The latter includes software customization, physical hardware mounting services, conversion of systems to different computers and matching complementary products from such companies as IBM, Apple Computer, Inc., Radio Shack and Texas Instruments, Inc.

ICE handles systems that include hearing, speech and language aids; learning disability and mental retardation aids; vision aids; and movement and neuromuscular support systems. ICE also provides consultation services, information searches in most areas of handicapped aids and rehabilitation products and services.

ICE is located at 526 Langfield, Northville, Mich. 48167.



SAVE 50% call
CIRCLE COMPUTER
before you **Install or Deinstall**
YOUR IBM MAINFRAME
we can **SAVE** you up to **50%** of IBM charges

Guaranteed IBM Maintenance Acceptability
303X FEATURES AVAILABLE
4300 FEATURES AVAILABLE
370 FEATURES AVAILABLE
Model change for all machines

Call us today
CIRCLE COMPUTER SERVICES, INC.
312-884-2424 920 Remington Rd. Schaumburg, Illinois 60195

CADO Systems Corporation

has been acquired by

Continental Telecom Inc.

The undersigned initiated this transaction, assisted in the negotiations leading to its conclusion, and acted as financial advisor to CADO Systems Corporation.

L. F. ROTHSCHILD, UNTERBERG, TOWBIN

January 6, 1983



NEW LIFE FOR 1401 PROGRAMS

CS-TRAN converts your 1401 object programs to COBOL for the mainframe or mini of your choice

CS-TRAN is the only translator that accepts your object programs, patches and all, yet allows you to include actual COBOL paragraph names and record definitions

If you'd like more details about new life for your 1401 programs just call or write Russ Sandberg



C-S Computer Systems Inc.
200 South Main Street, P.O. Box 356
Manville, NJ 08835 • 201-526-9000

Why IBM Value Added Remarketers like IBM.

Our Value Added Remarketers tell us that IBM service, support and products sold them on our VAR program in the first place. And keeps them sold.

That stands to reason. Our nationwide network of maintenance service locations puts help just a call away. But IBM service is more than convenient. As one IBM VAR says, "It's the best." Another VAR cites, "the worldwide availability of parts," as being important. That reservoir of parts—and experience—goes hand in hand with our reputation for fast, reliable service.

Our VARs also give IBM support as a very good reason. We not only help them decide on the right IBM products, we also help them sell with support that ranges from a broad spectrum of marketing aids to technical assistance and business management seminars. In one VAR's words,

"It's the team of people we can turn to. IBM always comes up with the answers we need."

Several VARs mention IBM hardware as a big plus. One says: "Its standing in the field helps reduce the selling hurdles." Another praises IBM's ability to, "keep customers up to date as new hardware develops." Both are referring to the success they had with the Series/1. We expect we'll soon be hearing the same praise about the Datamaster small business computer, which is now available to our VAR customers.

And one customer simply says: "IBM's Value Added Remarketer program offers enhanced revenue opportunities." That's a polite way of saying you make more money. Which is probably the very best reason of all.

If you'd like to learn more about our VAR program, we'd like to give you the details. Call Richard E. Patten collect, 914-696-4471.

Or send us the coupon.

IBM

Richard E. Patten
Sales Program Administrator
Marketing Channels Department
Value Added Remarketer Program

Information Systems Group
1000 Westchester Avenue
White Plains, New York 10604

IBM

CW-1-24

Mr. Richard E. Patten
IBM Corporation
1000 Westchester Avenue
White Plains, New York 10604

Please have your IBM Value Added Remarketer representative contact me.

Name

Title

Company

Address

City State Zip

Phone

I market application solutions to the following industries:

Off the Press

COMPUTER-READABLE DATABASES: A Directory and Data Sourcebook

Edited by Martha E. Williams

This massive volume, prepared by the American Society for Information Science, describes data bases that are computer-readable, available to the public and bibliographic, or word-oriented. Entries include subject matter and scope, frequency of updates and date of earliest available information. This is the most comprehensive reference "Off The Press" has seen.

Softcover, 1,472 pages, \$120, ISBN 0-914236-97-0. Knowledge Industry Publications, 701 Westchester Ave., White Plains, N.Y. 10604.

CORPORATE INFORMATION SYSTEMS MANAGEMENT: The Issues Facing Senior Executives

By F. Warren McFarlan

And James L. McKenney

Aimed at senior-level management, this work is an outgrowth of research projects at the Harvard Business School designed to develop strategic planning for information systems. In addition to covering technological issues, the book describes managerial controls, portfolio management in information systems and organizational issues.

Hardcover, 211 pages, \$17.95,

ISBN 0-87094-347-2. Dow Jones-Irwin, Homewood, Ill. 60430.

CONTROLLING SOFTWARE PROJECTS: Management, Measurement And Estimation

By Tom DeMarco

DeMarco, who has written other books on software systems, provides a pragmatic and objective set of tools and criteria "to replace the traditional wet-finger-in-the-air" technique. He shows how to quantify software systems with *function metrics*, seemingly a combination of operations research and flowcharting, which elicits its good models. DeMarco writes clearly, interestingly and often with humor.

Softcover, 284 pages, \$29.25, ISBN 0-917972-32-4. Yourdon Press, 1133 Ave. of the Americas, New York, N.Y. 10036.

SOFTWARE MANUAL PRODUCTION SIMPLIFIED

By Richard Zaneski

This book explores software documentation from soup to nuts. Zaneski begins with chapters on creating a documentation policy and developing standards for software manuals. All aspects of research, writing, rewriting, reviewing and revision are covered. This should be a useful book for technical writers, editors

and publications managers.

Hardcover, 190 pages, \$20, ISBN 0-89433-180-9. Petrocelli Books, Inc., 1101 State Road, Princeton, N.J. 08540.

GRAMMATICAL MAN: Information, Entropy, Language and Life

By Jeremy Campbell

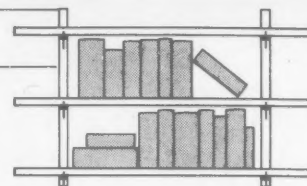
This is a fascinating study of information theory, which evolved with the development of radar during World War II. Campbell asserts that information theory disputes the concept of entropy in that we can make order and sense out of life — whether organic or man-made — using information theory tenets. Symbols, messages and codes are common not only to computers and communications, but to living organisms and the essential nature of human knowledge. The author thus defines the universe as "grammatical" — hence the title. A challenging, thought-provoking work.

Hardcover, 319 pages, \$15.95, ISBN 0-671-44061-6. Simon & Schuster, 1230 Ave. of the Americas, New York, N.Y. 10020.

SHORT TAKES

THE COMPUTER ESTABLISHMENT

By Katharine Davis Fishman



A definitive work on the computer industry, excerpted in *Computerworld's* "In Depth," Oct. 19, 1981, is available in paperback.

Paperback, 470 pages, \$7.95, ISBN 0-07-021127-2. McGraw-Hill Book Co., 1220 Ave. of the Americas, New York, N.Y. 10020.

ITT: THE MANAGEMENT OF OPPORTUNITY

By Robert Sobel.

The inside story of ITT, the world's largest conglomerate, by the author of *IBM: Colossus in Transition*.

Hardcover, 421 pages, \$15.95, ISBN 0-8129-1028-1. Times Books, 3 Park Ave., New York, N.Y. 10016.

THE HUT SIX STORY: Breaking the Enigma Codes

By Gordon Welchman

A personal account of how the British conceived and executed a code-breaking system to foil the German Enigma machine cipher system. Hardcover, 326 pages, \$12.95, ISBN 0-07-069180-0. McGraw-Hill Book Co., 1220 Ave. of the Americas, New York, N.Y. 10020.

ACM Schedules Sigcomm '83 On Protocols

AUSTIN — The theme of Sigcomm '83, slated here March 8-9, is "Putting Protocols to Work." Sponsored by the Association for Computing Machinery (ACM) in cooperation with the University of Texas at Austin, the conference will feature 12 technical sessions and panels on the status of network architectures and implementation experiences.

Session speakers include Vinton Cerf of MCI Communications Corp., Louis Pouzin of Cnet-France and John Shoch of Xerox Corp.

The fees for tutorials are \$70 for ACM members and \$85 for others who register before Feb. 11. The symposium fees are \$110 for members and \$125 for nonmembers after Feb. 11. More information is available from Rebecca Hutchings, Honeywell Information Systems, FSD/MS1003, 7900 Westpark Drive, McLean, Va. 22101.

JAPANESE COMPUTERS

An authoritative DIRECTORY

- 22 Japanese manufacturers
- 87 general purpose computers
- 72 minicomputers
- 92 office computers
- 16 distributed computers
- Operating systems, software (applications systems)
- Related information

For more information, write:
SCIENCE AND TECHNOLOGY PRESS
P.O. Box 614
Latham, New York 12110

This advertisement is neither an offer to sell nor a solicitation of an offer to buy these securities.
The offering is made only by the Prospectus.

950,000 Shares

QMS 
QUALITY MICRO SYSTEMS

Common Stock

Price \$17 Per Share

Copies of the Prospectus may be obtained from any of the several Underwriters only in states in which such Underwriters are qualified to act as dealers in securities and in which the Prospectus may be legally distributed.

Dean Witter Reynolds Inc.

E. F. Hutton & Company Inc.

Bear, Stearns & Co.

The First Boston Corporation

Blyth Eastman Paine Webber
Incorporated

Dillon, Read & Co. Inc.

Donaldson, Lufkin & Jenrette
Securities Corporation

Drexel Burnham Lambert
Incorporated

Goldman, Sachs & Co.

Kidder, Peabody & Co.
Incorporated

Lazard Frères & Co.

Lehman Brothers Kuhn Loeb
Incorporated

Merrill Lynch White Weld Capital Markets Group
Merrill Lynch, Pierce, Fenner & Smith Incorporated

Prudential-Bache
Securities

L. F. Rothschild, Unterberg, Towbin

Smith Barney, Harris Upham & Co.
Incorporated

Warburg Paribas Becker
A. G. Becker

Wertheim & Co., Inc.

Robinson Humphrey/American Express Inc

January 17, 1983

IN DEPTH

DOS to MVS:

Not Just a Technical Change

By Peter Tanquay

An aging operating system poses a threat to DP management, just as the crumbling foundation of a building threatens its owner's investment. Granted, years of hard work have contributed to the stable DOS environment at many installations. And migrations are notorious for project (and problem) overruns, often shooting the budget sky-high.

But how much more growth can the business absorb under its current system software and associated hardware? Will this resource allow expansion into new dimensions of data processing, such as multiple on-line systems, distributed data processing and the latest hardware? How long will it be before the operating system threatens all other areas of DP and the business?

Most DP departments that are using IBM or IBM-compatible mainframes are using either a DOS-based (DOS/VS or DOS/VSE) or an OS-based (OS/MFT, OS/MVT, OS/VS1 or MVS) operating system, of which MVS is the most advanced release. IBM has made a significant effort to relieve as many



ILLUSTRATION BY JAMIE HOGAN

IN DEPTH

people as possible of the DOS operating system in favor of MVS and this effort has been complemented by major software and consulting firms.

IBM is looking to MVS to provide the base for future information processing. Distributed processing, fourth-generation application development tools, information centers and the automated office cannot depend on a DOS-based system to provide a firm foundation.

MIS managers considering a DOS-

to-MVS conversion often concentrate their attention on systems software considerations. After all, there is plenty of information available in this area. But a sound migration plan is more than simply a technical project. It encompasses philosophical issues, training and production requirements and management concerns such as the budget, long-range planning and user satisfaction.

The amount of upper management foresight in the business is di-

rectly related to how difficult the DOS-to-MVS conversion will be. From a management perspective, technical considerations will fade fast alongside issues of budget, staffing, user demand and satisfaction, direction and business philosophy.

Long-Term Planning

A migration from DOS to MVS poses many challenges to a DP five-year plan. First, consider the budget:

- The OS version of most software

products (whether from IBM or an independent company) costs significantly more than the DOS counterpart (if one exists).

- Experienced applications and technical staff demand a higher salary, in some locations are harder to find and cost more to train.

- The MVS system will require more hardware resources, especially direct-access storage devices (Dasd) and memory. It may also be necessary to add staff to support the same application systems that were supported by the DOS system and staff.

These and other areas of the budget will probably increase during a migration to MVS. The budget increase, however, coincides with additional requirements and growth in other areas of data processing that were supporting factors for considering MVS in the first place.

A second consideration, timing, may be the most critical element of a DOS-to-MVS migration in terms of business needs and the ability of the information systems to respond to them. Timing will also influence the DP staff's acceptance of the operating system change. One of the best reasons *not* to migrate to MVS is a DP staff that is split over the issue. If the business will be patient, it may be wise to postpone the migration in order to educate the staff and establish a consolidated management direction. Migrations require everyone's support.

Timing from the business standpoint will be led by an individual or small group of individuals who anticipate the system requirements so that migration is either complete or nearing completion when the DOS system reaches the point of diminishing returns. The daily responsibilities of most of the staff usually keep them from projecting their future requirements with the lead time necessary for this project. The migration will challenge many areas of the shop (some of which are taken for granted) so there must be time for people to digest the changes, consider and accept the new environment.

User satisfaction and cooperation (in this case at the higher levels) are a third management consideration. Upper management's support is essential, because the migration project is filled with long-term promises and few short-term advantages, especially to people outside of DP. The effort to stabilize application systems while the operating system is being changed is in direct conflict with the dynamic user environment. People expecting application changes may become frustrated and in some cases will pursue alternative methods to fill their requests, such as using their own programming staff, microcomputers and so forth.

In addition, an operating system migration often gets "real old" before it is over. The need to obtain upper management support at the outset will become obvious when the project is two-thirds complete and

At Last, Integrated Decision Support

Imagine how difficult business would be if each department spoke a different language. Until the EPS family of planning software was complete, that's exactly what people were forced to do.

A new approach.

Today, EPS has developed a single, high-powered system to meet every decision support need at every level of management... for virtually any size computer, from personal business microcomputers to over 40 mainframe and mini computer environments. All systems use the same "Business English" modeling language. All incorporate pre-written financial functions. All include complete "black boxing" capabilities for automation of the most complex applications. Powerful report writers and color graphics can produce exactly the output you need. Add to this a relational database, multi-dimensional consolidation, statistical analysis, risk analysis, and much more, and you can see why FCS-EPS is the number one selling DSS package in the world today.

What does that mean to you?

While corporate database management, consolidations, and integrated planning systems may be done on a powerful mainframe or mini computer, day-to-day projects and subsets of those larger applications can be done on a distributed basis using personal computers as local processors in a cohesive network.

Thus, every manager...

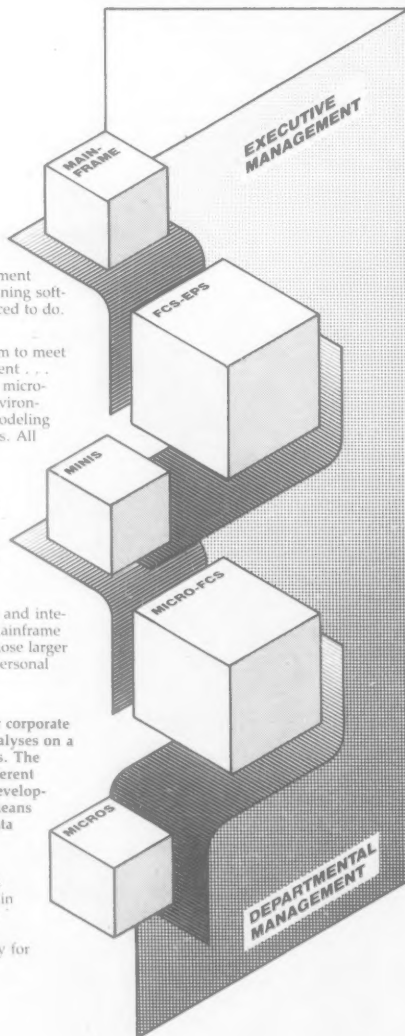
... can participate in developing sound solutions for corporate productivity. The results of one person's "what if" analyses on a micro can be incorporated into larger corporate models. The same model can be used by all locations, even on different brands and classes of hardware, eliminating extra redevelopment. For the individual, personal decision support means total control over the refinement of all models and data before the numbers are integrated into the corporate system.

Integrated Decision Support means a multiplied return on your investment... in existing EDP resources... in existing management talent. And it all begins with the EPS family of decision support systems, the choice of professional planners around the world. Call EPS today for more information.



EPS One Industrial Drive
Windham, NH 03087
603-898-1800

Atlanta (404) 972-1980 • Chicago (312) 693-2470 • Cleveland (216) 524-8440 • Detroit (313) 879-5876 • Houston (713) 771-0618
Los Angeles (213) 827-8961 • New York (212) 563-5656 • San Francisco (408) 292-6212 • Seattle (206) 453-8410 • Tampa (813) 962-3528
Toronto (416) 279-8711 • Montreal (514) 631-2090 • London, England (01) 579-6931



IN DEPTH

user management is getting anxious about the time it is taking and the lack of any tangible results.

Meeting these challenges requires a good understanding of the information processing direction of the organization, the limitations of the DOS system in pursuing this direction and why an MVS system is the best operating system on which to build your future. If you are not comfortable in these three areas, either postpone the migration or keep DOS.

Principles and Guidelines

Once a preliminary review of the situation has been completed and the decision has been made to evaluate a migration to MVS, there are a few guidelines and principles that should be considered. The first step must be to allocate resources to a planning effort. The objectives of this planning phase are to assess the current environment, analyze the migration requirements and set up a migration plan. The decision to convert or not is made at the end of the planning phase.

Following are the essential guidelines in planning:

1. Allocate a small team to do the planning. Don't involve everybody. Assign the best resources that can be committed 100% of the time. Focus on tomorrow.

2. Take your time. Challenge the assumptions of the current environment. Understand what it is that is being converted. Be objective; get support from MVS people in the community and from your vendors.

3. Identify the business risks that must be minimized and the areas of greatest exposure (length of project, availability of on-line systems, support of current systems, cost and so on). Identify how these risks will be minimized. It is not uncommon to spend six months to a year in planning, so begin early.

4. Define the scope of the migration, which will be dictated by timing, the need for MVS and the corporate setting. Some firms want, above all, to begin operating under MVS as soon as possible. Then a new project is defined to convert the "DOS" systems running under MVS to systems that use the features of MVS. Other companies can afford the time to convert each system to an MVS system, rewriting and modifying programs to conform to new standards and application development guidelines and to take advantage of MVS features. It is important during planning to fence in the migration and develop a well-defined set of major steps for getting there.

As a second guideline, focus on the production perspective. Assume that we divide the DP department into two areas: the systems development and maintenance area and the operations or production group. In most cases, the migration will be led by someone in the systems development area. The changes and chal-

'In the planning group, be sure there is strong representation from someone who focuses solely on the production perspective. This helps keep the migration fenced in to produce first a system that will meet current production requirements.'

lenges resulting from the new environment will be very different to these two groups.

In addition, it is not uncommon in a small shop (which would tend to be a DOS shop) for the systems develop-

ment area to be in the driver's seat for most aspects of data processing.

Furthermore, you can expect to find a difference of opinion about the current environment if the two groups are approached separately. With the above in mind, be sure there is strong representation from someone who focuses solely on the production perspective. This helps keep the migration fenced in to produce first a system that will meet cur-

(Continued on Page 31)

"This system has been faultless. We anticipated problems; we didn't have them."

Alan Lewis, Systems Manager, Thom McAn

Increasingly, companies who consider any downtime unacceptable have been turning to Stratus, a company with a reputation for high reliability that lives up to its billing. Comments by early Stratus customers indicate

that Stratus has delivered on its promise of a hardware solution to fault tolerant processing. These companies were surprised by other Stratus qualities they hadn't expected, and an operating system called "... light years ahead

of others we've had to work with," by a major Wall Street brokerage firm.

Here's what companies who came to Stratus because they need a high reliability computer are saying:

"We have 10 programmers on our Stratus project. They are all extremely pleased with the Stratus hardware and software. The Stratus support has been excellent—even better than expected."

Bill Swigart, Executive Vice President, A. C. Nielsen

"Converting from an IBM 4341 to Stratus was the easiest conversion I've ever done."

Paul Femino, President, FEMCON, Software consultants to West Lynn Creamery

"I'm incredibly impressed with the quality and maturity of Stratus's software and hardware."

Michael Feldman, Vice President, Technology Consulting Corp.

"Anybody can learn the Stratus editor in a few minutes. I find our programmers are dealing with the applications, not fighting the computer environment."

Tony Peraino, Software Contractor, Macomb Multiple Listing Service

If one thing that's been holding you back from looking at the Stratus Continuous Processing system is a proven track record, give us a call. We have a fast

growing list of "track" records who are willing to tell you about their experiences with Stratus. To get more information call us at 617-653-1466.

Stratus
CONTINUOUS PROCESSING™

Now that the world relies on computers it needs a computer it can rely on.



IN DEPTH

Have 384 lines, 8000 chars. will travel.



When it comes to serving the needs of today's fast-moving world of computer technology, you can depend on G.R. Electronics.

That's why we've developed the Pocket VDU. Travel anywhere with this self-contained, alphanumeric, hand-held fully portable terminal that provides the facilities of a full-size terminal in a light-weight, pocket-size unit with clear 40-character display.

Small is beautiful. Check these features:

- 8000 char., 384-line memory
- Conversational or batch-mode operation
- 2-line, 40 char. display
- All memory accessible for display
- Full ASCII 128-char. set inc. contr. codes
- LINE and EDIT modes of operation
- Selectable RS232C, RS422 or 20mA loop interface
- 11 selectable baud rates: to 2400 continuous; 4800 and 9600 baud in bursts
- Rechargeable nickel cadmium batteries
- Optional 5V external power source plus external ETX charger
- 30 hours continuous operation from full charge
- Switched off unit retains data for weeks
- Low Battery indicator
- Battery life 800-1000 charge/discharge cycles

Comprehensive I/O facilities, low cost, and easy portability make the Pocket VDU a practical choice over conventional terminals in any application where portability and economy are important factors.

DEMs: • Use it with custom-built systems as a low-cost I/O and systems control device • Easily portable aid for development and service engineers

Engineers: • In-system fault diagnosis on processor-based systems • Interrogation, debug, and status monitoring • Bench testing • Data collection/retrieval

Programmers: • Software debug and modification • On-site reprogramming of limits and constants

For more information and brochure call or write:

GR Electronics
1640 Fifth Street, Santa Monica, CA 90401
Phone: (213) 395-4774 • Telex: 652337 (BT Smedley SHM)

How a Health Care System Handled MVS Migration

Following is the author's account of his installation's recent DOS-to-MVS conversion.

The Baptist Medical System is an expanding regional health care system serving the state of Arkansas from corporate headquarters at the Baptist Medical Center in Little Rock. In addition to four hospitals in a 50-mile radius, the system includes training facilities in many areas of medicine and handles referrals statewide for complex diagnoses.

The system's fourth hospital opened in 1981, the same year a \$23 million addition was completed at the main facility. In November 1982 the system broke ground for a \$40 million retirement community.

Automated information reaches almost every function within the hospital system. A teleprocessing network of more than 300 on-line devices at four locations is CICS-based from an IBM 4341-II at a central site running MVS. A backup IBM 3031 provides security in case of a CPU outage and also serves as an applications development machine.

The decision was made to migrate to MVS from DOS/VS in the fall of 1980, before we added our fourth facility. We had to upgrade from DOS/VS to DOS/VSE or consider a migration to an OS operating system. Expansion plans, security demands, the importance of system reliability and the capability for distributed processing made MVS the clear choice.

In a meeting in February 1981, we identified our potential constraints as follows, in order of magnitude:

- The existing operating environment presented problems. The CICS network provides on-line service 22 hours a day, seven days a week. Batch processing had filled up the production schedule, leaving little room for additional work. An error, rerun or system outage often produced a ripple effect in the rest of the production schedule.
- The organization planned to grow (the first addition turned out to be the fourth hospital that summer).
- IBM support had run out for the DOS/VS operating system and the Vtam release we were running (which could not be upgraded without a new operating system). This situation put our systems software in a tenuous position.
- It was clear that we would have to add more Dasd, memory and available CPU cycles to complete the migration.

We reviewed the constraints and drew up a project plan using the IBM DOS-to-MVS Structured Support Plan (SSP). We felt that the following objectives should be met in order to minimize the risk and the impact on the user environment:

- Complete the migration by fall 1981.
- Convert the systems as they were, not rewrite or modify them during the migration.
- Freeze application changes where possible.
- Dedicate a project team 100% to the migration.
- Use existing personnel where possible and add some people with MVS experience and skills.
- Keep the migration transparent to the user community.

Of an application staff of 10, we dedicated four to the migration full-time. When the new facility was added in the summer, the effect on the migration was kept to a minimum. We were not able to dedicate this level of resources in the technical area, which was to our disadvantage.

We chose to use the UCC product, Duo, which allows us to run DOS object code under MVS. I feel that this was a very good decision, especially considering the time frame in which we expected to convert. We are now converting programs that are using the Duo interface without the time pressures and exposure that existed during the conversion.

Once the migration began, rather than freeze all of the changes, we found that a good method of tracking changes kept the migration more transparent to the user community and kept the exposure from changes to a minimum. In addition, when MVS became the production system, our backlog of requests was smaller.

Our largest variance from our initial objectives was in the length of the project. Our final cutover did not occur until May 15, 1982. However, the cutover had minimal impact on the user community. The delay had many causes, but the key is that we did not cut over until we had great confidence that there would only be one cutover.

In terms of hardware, we began with a 3031 with 4M bytes of memory and 6G bytes of Dasd storage running DOS/VS under VM. Our intent was to migrate to MVS using the 3031 with MVS and DOS running under VM. As the migration progressed, it became clear that this configuration would be inadequate. We completed the migration with a 3031 and a 4341, both with 8M bytes of memory and 11G bytes of Dasd storage, running two copies of MVS in a shared catalog environment.

MVS is providing the systems software base for our application systems that we had expected. Operations and applications personnel have come through the migration quite smoothly. The technical support area is where it has been most difficult to find qualified personnel.

We will train you in UNIX™ and the "C" Language

...And, back it with 50 years of technical experience.

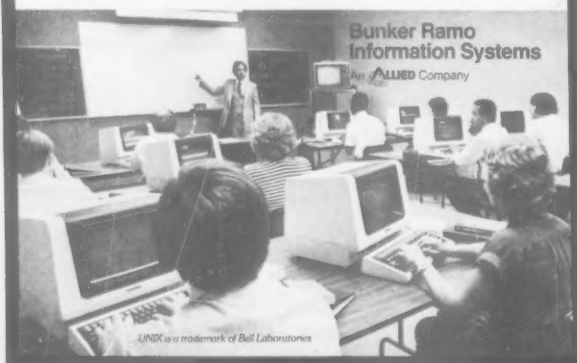
The leader in on-line data information equipment and applications for over 50 years, Bunker Ramo now provides a training course which gives you:

- A one terminal/one user classroom environment
- Proven hands-on learning techniques
- Comprehensive textbooks
- Complete course documentation
- State-of-the-art instructional methods
- Special group registration rates

Current course offerings include:

- Introduction to the UNIX environment (5 days)
- Introduction to "C" programming language (5 days)
- Advanced UNIX methods (5 days)
- Advanced "C" methods (5 days)

For a detailed prospectus, call or write:
Bunker Ramo Information Systems
Training Services Group
35 Nutmeg Drive
Trumbull, CT 06609
(203) 386-2600



UNIX is a trademark of Bell Laboratories



... the one
weekly newspaper
that's designed to fulfill your
unique "need to know"...
the one newspaper that can
give you all the current
information you need to benefit
you, your organization and
your career progress...
52 weeks of incisive news,
commentary and special
reports... subscribe today,
use the attached postage paid
order form.

☐ Please enter my subscription
(details on back)

☐ I'm already a subscriber,
but I'd like you to
change my:
☐ address
☐ title
☐ industry
☐ other

My current mailing label is attached
and I've filled in new information
on the other side.

Put old label or label information here

COMPUTERWORLD

Please send me **COMPUTERWORLD** for one year. **RATES: United States \$44; Canada, Central & South America \$110; Europe \$165; All Other Countries \$245 (Airmail Service)**

☐ Check Enclosed ☐ Am Ex ☐ BA/Usa ☐ MC ☐ IMC Only - List four digits above your name) _____

If charge we must have cardholder's signature: _____

Expiration Date: _____

First Initial	Middle Initial	Surname
____	____	____
Your Title	____	
Company Name	____	
Address	____	
City	State	Zip Code
____	____	____

Address shown is:
☐ Business
☐ Home
☐ Check here if you do not wish to receive promotional mail from Computerworld
☐ Check here if you're interested in receiving information on Computerworld's Index



CIRCULATION DEPT. 375 Cochituate Road, Rte. 30, Box 897, Framingham, MA 01701-9985

Detach here, fold, and place in post-paid envelope attached through binding.

- PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY
- BUSINESS/INDUSTRY**
- 10 Manufacturer of Computer or DP Hardware/Peripherals
 - 20 Manufacturer (other)
 - 30 Distributor/Reseller/Leasing/Consulting
 - 40 Public Utility/Communication Systems/Transportation
 - 50 Wholesale/Retail Trade
 - 60 Finance/Insurance/Real Estate
 - 70 Mining/Construction/Political/Religion
 - 80 Education/Medicine/Law
 - 90 Government - Federal/State/Local
 - 99 Printing/Publishing/Other Communication Service
- ONE OCCUPATION/FUNCTION**
- 11 President/Owner/Partner/General Manager
 - 12 VP/Assistant VP
 - 13 Treasurer/Controller/Finance Officer
 - 21 Director/Manager of Operations/Planning
 - 22 Director/Manager/Supervisor DP/MIS Svcs
 - 23 Systems Manager/Systems Analyst
 - 31 Manager/Supervisor/Programming
 - 32 Application Engineer/Analyst
 - 41 Application Engineer
 - 42 Other Engineering
 - 51 Mfg Sales Representative
 - 52 Other Sales
 - 60 Copywriter/Marketing
 - 70 Lawyer/Accountant
 - 80 Librarian/Educator/Student
 - 90 Other:

IN DEPTH

(Continued from Page 29)
rent production requirements.

Here, production refers to batch systems and on-line system monitoring by DP personnel. The on-line network from the users' perspective is buffered by the teleprocessing software, which is not a big change from the DOS operating system to MVS. The batch production arena requires well-defined training programs and will feel the effect of DOS-developed systems running on a new operating system. The operations group tends to be less educated in DP in general and will not be able to allocate people to the new system as easily.

New development can be postponed much more easily than current production requirements. This is emphasized because the production personnel and production issues are often forgotten as the applications personnel convert "their" systems. In some cases, a phased applications approach may be best to ease the changes on the operations staff.

No Substitute for Expertise

A third guideline is to get MVS experience. Don't expect the DOS-trained people to be able to establish an MVS environment. There are too many basic differences and techniques that will cause the new system to be awkward and too much of a hybrid. In addition, the staff will be very protective of the methodologies that worked well with DOS, but may no longer be suitable.

The process of acquiring MVS experience could be the most significant part of MVS migration planning. Do not exclude current staff members, but do make sure that the MVS experience is strong enough to support the design and objectives of the MVS system and to counter the leading personnel in the shop if their DOS allegiance poses a conflict. If it takes an expensive consultant, hire one. If the migration must be delayed to educate personnel, take the time.

To illustrate the magnitude of the difference, compare DOS to a fast car and MVS to a jet plane. If the objective is to go from New York to San Francisco, the old mentality would drive the plane at 400 miles per hour on the ground. It takes a new perspective and set of techniques to lift the nose off the ground and fly.

A fourth principle: Don't try to track the migration manually. The planning phase fenced in your objectives and defined your areas of exposure. In the next phase, fully define the migration at a task and program or system level. Again, be sure to look at the tasks from both a production and development perspective.

Then automate! When the applications systems are disassembled, you should not have to rely on manual methods to give your status. Automated tracking and status reports are essential to maintaining control of the project. There are many software

tools for project planning on the market, but in some cases, developing your own may be the best approach. Moreover, as the MVS environment becomes more defined through implementation, it is important to cross-reference systems running on both operating systems.

As for Hardware . . .

In the area of hardware, here are a few suggestions. Do not underestimate the need for hardware re-

sources, especially memory and Dasd. Remember, for a while, there will be two systems running. On-line editors used for MVS program maintenance will provide more functions than the DOS counterparts, but they will also use more resources. With deadlines for system conversion, the on-line work load will also increase. This may put a strain on your existing system.

For testing, on-line editing and compiling, the need for Dasd, memo-

ry and CPU time is staggering. Evaluate how much the current environment can afford to be degraded during testing of the new system. Also, how well can they be scheduled around one another? An MVS environment running with a DOS environment during a conversion will require much more than twice the DOS environment. Exactly how much more depends on the shop.

In summary, a DOS-to-MVS migration should begin with an exten-

THIS IS WHERE THE INDUSTRY IS GOING!



INFOMART should be the future address of anyone involved in the marketing of information processing products and services because INFOMART addresses itself to virtually every one of your marketing problems.

INFOMART brings the buyer and seller together in a central location specifically designed to help compress the buying cycle.

INFOMART educates and informs buyers of all levels through comprehensive, ongoing seminars and symposia designed to help them evaluate and purchase.

INFOMART is located in the most dynamic business center in the nation — DALLAS! A city whose accessibility, climate, airport and financial base make it the ideal trade environment.

INFOMART is an extension of a 30-year tradition. The Dallas Market Center, the largest, most successful merchandising complex of its kind, attracts over 500,000 buyers each year.

INFOMART is a cost efficient answer to the industry's most pressing problems — how to educate, exhibit, demonstrate and market your products at a reasonable, controlled cost.

For more information about INFOMART, contact Bill Winsor, Vice President/General Manager, 2100 Stemmons Freeway, Dallas, Texas 75207, (214) 655-6235. You'll not only learn who in the industry will be addressing at INFOMART, you'll also learn why.

THE INDUSTRY'S MARKET SUPPORT CENTER

INFOMART

IN DEPTH

sive planning phase, when the DOS environment and the costs and results of an MVS migration are fully analyzed.

Be sure to focus on the production environment in the short term as well as the application systems in the long term.

Automate the conversion process where possible to increase your understanding of what is happening and to provide status information throughout the project.

Resources

What is the most painless route to restoring the technical foundation for application systems that will allow for the organization's growth and long-range DP plans? An examination of the resources available to assist in a conversion will tell a story in itself.

During the planning phase, an extensive review of the services and tools available will provide a foundation for understanding the tasks and

issues at hand. Following is a partial list of resources:

1. Consulting firms will send information-gathering forms and/or spend time with you to evaluate your situation. This process is helpful whether you decide to enter into a contract for their services or not. They will help put a fence around the migration and allocate resources for the conversion.

2. The DOS-to-MVS Structured Support Plan (SSP) from IBM is a tool

that walks through the planning and preparation stages by using the Project Evaluation and Review Technique (Pert). This tool is a result of IBM's recent emphasis on converting as many DOS customers to MVS as possible. The product takes advantage of the experiences of some of the foremost authorities within IBM on the topic. The package includes a sample MVS standards manual, a conversion team users' guide, a project managers' guide and a Pert chart with sample migration activities and events. These are all available in machine-readable form to be tailored to your installation and they focus on the managerial and project leader aspects of the migration.

3. There are a number of conversion tools for job control language (JCL), and these should be reviewed closely. One of the major changes for the applications personnel is in the area of JCL. A conversion tool will relieve most of the manual effort in converting the JCL and will provide an excellent framework for training and cross-reference of DOS to MVS JCL. Conversion tools are also available for source programs.

Many documentation tools will provide flowcharts, cross-reference reports and so on from conversion activities and/or JCL. These are very important. MVS JCL has much more job information in it than DOS and can be analyzed to provide high-level system information. When looking for these tools, review those designed for the MVS environment in addition to tools that are marketed specifically for a conversion.

4. Take a close look at MVS system management software such as tape management systems, disk management systems, job scheduling systems and restart/rerun control systems. The MVS environment handles these activities much differently than DOS, and an examination of these products can illuminate many of the differences to help change your mode of thinking to match the assumptions and opportunities of MVS.

5. A final product worth mentioning is the UCC2 product (Duo) from University Computing Co. This enables DOS object code to be "Duo-linked" under MVS and run on MVS using Duo as an interface. This has many benefits for companies that have distributed DP centers and do not want to convert all of them to MVS; companies that have time restrictions for eliminating DOS; companies with very dynamic or extremely critical exposure levels; or companies that have many systems that will be replaced in the near future and do not merit the conversion effort.

In summary, many people have invested a lot of energy toward providing a means for migrating from DOS to MVS and managing the MVS environment. Take the time to understand these offerings. The education and documentation alone will

THE ONLY THING OUR LEVEL 6/DPS 6 SOFTWARE CAN'T GIVE YOU IS THE PRIDE OF AUTHORSHIP.

At ICS, we've been developing and installing software for Honeywell Level 6 and DPS 6 computers since 1977.

So we know the machines and MOD 400 inside out.

But we also know user needs inside out. Because before we became vendors, we were users.

Our current product line includes all of the tools we wished we had had available back when we were users.

We have a complete financial management system as well as a

financial planning and modeling tool for end-users.

Our line of system control products includes a menu-driver, a security system and a fully-functioning print spooler.

The famous ICS "Toolbox" line consists of more than 100 modules that can help you speed up and debug COBOL programming. Keep track of available memory, TSA's and IRB's. Debug assembly programs. Handle program interrupts and unwind traps. Abbreviate commands. Search, add, change and delete files. And develop "Help" facilities.

We also have word processing and report writing software. Specially designed for Level 6/DPS 6 equipment.

Whatever your application is, you owe it to yourself to talk to us.

Chances are, we already have the software that can solve the problems you're having.

Of course, our software won't give you the pride of authorship. But we do offer something that we think more than compensates.

The absolute, unbounded thrill of having your computer do everything it was intended to do.



**Independent
Computer Systems, Inc.**
8686 North Central Avenue
Phoenix, Arizona 85020
(602) 944-9693

IN DEPTH

make the process worthwhile. And again, IBM is most interested in your conversion and has much to gain from it. Be sure to utilize its resources: at this time of hardware and software expansion, the leverage with your vendor is at your advantage.

Final Cutover

There are various methods for cutover to MVS: by system, by groups of related programs, by schedule and so on. Two recommendations here: Give adequate lead time for testing to uncover inconsistencies and make one cutover for each unit. Do not straddle the fence too long or go back and forth between systems. If you do, you will get stuck and the integrity of your data and the momentum of your staff will be endangered.

Postpone the cutover until the probability of success is very high. The on-line systems at first appear to be more difficult than the batch, but my experience was that the batch systems involve a greater change and are more difficult.

Once MVS becomes the host operating system and DOS is history, the opportunities open wide. Management is presented with putting together a new organization to develop and exploit the new DP environment. This may mean new positions and responsibilities and increased staff.

Operating system standards and procedures, capacity planning, change management, and system performance and accounting issues are very important. Whether or not these were adequately dealt with in the DOS environment, the system has changed and they must be reviewed along with the other DOS assumptions and procedures. The basis for review should be one of the migration's results.

Management must realize that the learning curve and

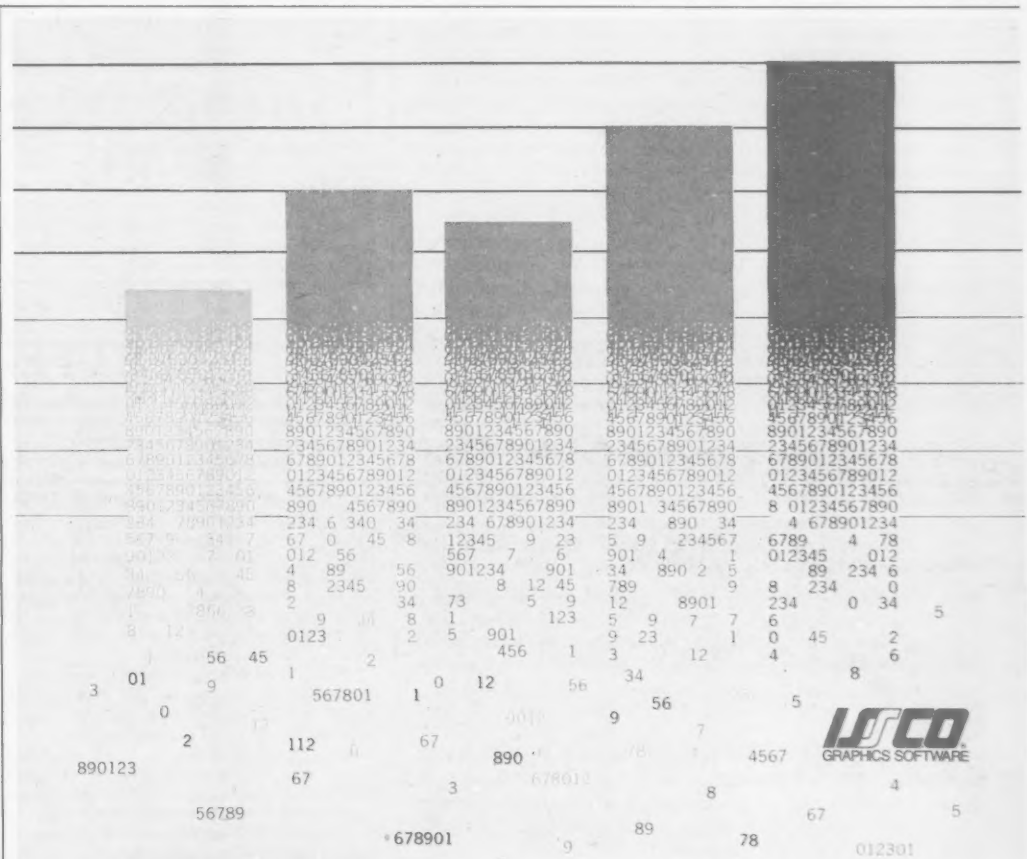
the processes of refinement in these areas were quite mature in the old environment from years of experience. Don't try to cement all of these procedures, standards

and policies until the MVS learning curve begins to level off and the personnel in your shop have had an opportunity to participate in redefining the environment in

which they will work. It takes time to change completely those familiar habits and techniques that worked so well under DOS and to develop sound methodologies

to use the features of MVS.

Remember, the objective of the migration was to provide a foundation on which to build your systems future. That task is now at hand.



INTRODUCING THE DATA CONNECTION.

The final link to complete computer graphics

DISPLA* device independence 1969; design flexibility 1974; TELL-A-GRAF* ease of use 1978; graphic-artist quality 1980; CUECHART™ 1982.

Now, ISSCO-quality graphics enters the mainstream of data processing with THE DATA CONNECTION—a TELL-A-GRAF graphics-software link that provides both easy access to data and data manipulation for graphic presentation.

THE DATA CONNECTION and TELL-A-GRAF combine the industry's most advanced presentation-graphics software with direct paths to virtually all business and scientific data sources—for display in graphics format for fast understanding, better decision making, and maximum impact.

With THE DATA CONNECTION you can:

- Connect ISSCO graphics to all data, wherever it may be stored.
- Select appropriate data; exclude what is irrelevant.
- Extract data from both standard and non-standard files.
- Read tabular data from printer reports stored in any format.
- Accept data from application programs at data-generation time.
- Arrange data for maximum graphics impact.
- Organize, accumulate, summarize, tabulate.
- Perform mathematical analysis for decision support.
- Edit, store, retrieve and periodically update.

Shouldn't you have complete computer graphics? Call or write ISSCO—the industry leader in graphics software for more than a decade.

ISSCO, 10505 Sorrento Valley Road, San Diego, California 92121 (714) 452-0170

SOFTWARE/EXPO - BOOTH #100

About the Author

Pete Tanquay has worked in data processing since 1976. He is currently supervisor of special projects at the Baptist Medical System in Little Rock, Ark., where he recently was responsible for a DOS-to-MVS conversion. Previously he worked for Storage Technology Corp. in Louisville, Colo., doing data base design and programming.

EDITORIAL

In Search of a Measure

Productivity has become to DP what team spirit has long been to sports: something everybody wants, but nobody knows how to measure.

A majority of DP managers recently surveyed by *Computerworld* said that although they are actively looking for ways to improve programming productivity, they know of no definitive way to evaluate those improvements [CW, Jan. 17].

In the salad days of computing, productivity was effectively measured by counting lines of code or measuring the time required to produce an application. But application generators and high-level and nonprocedural languages have rendered such measures useless. "We've got some small programs that are absolute bears and large programs that we can give to trainees," the manager of one large installation said.

Attempts to develop a standard of measurement continue. One method proposed by Allan Albrecht, IBM's program manager for application development and maintenance measurements, and endorsed by productivity authority T. Capers Jones, involves counting the number of external user inputs, inquiries, outputs and master files delivered by the development project. The counts are weighted according to a formula developed by Albrecht which, he said, gives "a dimensionless number defined in function points, which [is] an effective relative measure of function value delivered to our customer."

Albrecht's function point method is probably as good as any. But from a practical standpoint, we question whether the benefits of a standardized productivity measure warrant all the fuss.

Anyone who works in DP today is familiar with the syndrome known as the "software bottleneck." The volume of applications demanded by users simply exceeds the amount of programming and machine resources the DP shop can offer. Managers needing productivity aids are too busy finding something to relieve the backlog to worry about quantifying the benefits of new technology. They are not likely to fiddle with formulas while Rome burns.

We believe large shops increasingly will come to emulate the methods of smaller installations. In many of those, the ability of programmers to meet goals on time and within budget is weighted far more heavily than lines of code produced.

"We're expected to produce 100%, even if it means working weekends and nights," said the director of a small installation at a California lumber company. "All results have been what they should be: no downtime, no reruns, no edit runs and no blackouts because of errors."

Of course, the job of evaluating performance is easier for the small shop. But the objective approach is one that could benefit even the largest installations. DP managers need a productivity measure that evaluates results, not input.

DATA PAST

Five Years Ago Jan. 16, 1978

NEW YORK — After three years of harassment that included six lengthy police interrogations as well as apartment searches and seizure of personal papers, Dr. Valentin Turchin, a noted Soviet computer scientist, arrived here with his family.

Ten Years Ago Jan. 17, 1973

GAITHERSBURG, Md. — No single interface standard should be developed for all peripheral equipment, but the government should develop selected standards in the tape and disk area, a National Bureau of Standards draft report said.



The Premature Prognosticator

LETTERS

Validity Studies

It is not surprising that a test publisher like myself would find the editorial "How Unfair Is Testing?" [CW, Dec. 6] enlightened and insightful. I would like to add some factual words of hope and comfort to would-be programmer aptitude and proficiency test users who are concerned with validity studies and legality.

First, "validity generalization" is a procedure for relying on the combined results of previous validity studies conducted by diverse organizations on the same test.

Use of validity generalization was successfully supported in at least two court cases that I know of: *Friend v. Leidinger* (1977), which involved racial discrimination charges against a fire department in Virginia; and *Peques v. Mississippi State Employment Service* (1980), which involved race discrimination and sex discrimination charges.

These cases did not involve programming tests, but I am sure that validity generalization (if high) is an appropriate procedure to support the use of tests for selecting programmer trainees and experienced programmers. (Validity generalization for our Berger Aptitude for Programming Test, for example, based on 16 validity studies, is very high: .74.)

If you select a test with a high validity generalization, then you should not have to conduct your own validity study.

Second, "consortium studies" are another means of avoiding costly and time-consuming within-organization validity studies. An association of banks, for example, can do a joint validity study with just a few programmers from each bank participating. The cost is fragmented and small for each participating organization.

Finally, "validity transportability"

is an Equal Employment Opportunity Commission-approved option in which one organization can use the test validity results of a study done by another organization because essentially, the programmer job descriptions of the two organizations match.

I believe that these alternatives to large-scale test validity studies make the DP personnel testing situation much less grim.

Frances R. Berger
Co-Publisher, The Berger Series
Of Computer Personnel Tests
Psychometrics, Inc.
Santa Monica, Calif.

DP Library Tips

As a holder of an M.A. in library science and a B.A. in computer science with experience in both fields, including setting up a library, I would like to expand on the answer given by Larry E. Long regarding a DP librarian in Turnaround Time [CW, Dec. 13].

There are many trade journals and other sources in library science that will help identify relevant literature dealing with DP and information systems.

In addition to this, there are indexes available that cover many of the current issues of journals.

With regard to acquisition, there are vendors and library journals that regularly announce forthcoming books and other materials prior to publication, often with reviews of prepublication copies.

Perhaps consideration should be given to sending the DP librarian to school to pick up some of the basic courses on cataloging, reference and acquisitions.

Felix T. Chu
Systems Division
Nebraska Department of Revenue
Lincoln, Neb.

LECHT ON SCIENCE / Charles P. Lecht

Rebundling — This Time It's Here to Stay

Rebundling — or, perhaps more precisely, "de-unbundling" — is taking place before our very eyes. And this time, it's for keeps. Usually reserved for the process of packaging hardware and software for sale as a single unit, bundling, this time, will encompass a lot more. Because of this, we may not recognize today's bundle as such, but a bundle is a bundle! If you have trouble identifying one, retention of a local hobo as an expert consultant may not be a bad idea (if each bundle-buying employer hired just one unemployed hobo ...).

In 1969, IBM was pressured to unbundle its software — an act that, in the event, does not seem to have caused it too much pain. Separate pricing emerged.

That the "no bundling" adjuration applied only to the eminently successful companies offers a (doubtless unintended) insight into what our regulatory watchdogs thought of other companies in our industry. Either much smaller, or faltering, these relative "small-timers" were left alone on the assumption that their bundled operations were more threatening to themselves than to anything or anyone else.

It came as no surprise when they, too, eventually saw the wisdom of unbundling, but this spoke less to the kind of companies they were than it did to the kind of company they aspired to keep!

It had become impolitic for a really successful computer systems manufacturer to offer hardware, software and services in a bundle without indicating separate pricing for each

and allowing purchasers to buy any one without prejudice to those purchasing all.

A Fragmented World

After 1969, we lived in a world that could only be viewed by our government's regulationists as beautifully, even opulently, fragmented. Our data was processed and/or communicated courtesy of a commune of manufacturers linked by commercial necessity. Product offerings were delineated according to supersets of their components: peripherals, software, CPUs, services and communications. And we've sold these on a separate pricing basis for so long that it's possible we've forgotten what bundling was in the first place.

For example, however large or small in number or differing in nature the parts in today's computer systems hardware environments, their packaging and sales literature never use (or even imply) the unseemly word "bundle" (perhaps it should henceforth appear in our text as "b-----"). Even if each part were made by a different manufacturer, from a marketing and sales standpoint, the need for a unified product image would never admit to stooping to the undignified level evoked by the term "b-----."

Succumbing at worst to the "package" label, today's products are usually described in more elegant terms, like "synergetic systems," suggestive of the kind of interactive harmony encountered only in organic life. If "package" must be used, "integrated package" is generally preferred, in order to imply that its parts are not

just lying about in a box, nor enjoying the same relationship to an organizing principle as a Russian granny's collectivized brain does to her babushka.

A Conceptual Boundary

This issue is one of such sensitivity that we have created a conceptual boundary for ourselves, within which our definitions of computer technology components must fall if they are, when taken together, to qualify for the more highfalutin "system" title.

Take, for example, IBM's System/38. Sold with one piece of software alien to its product definition, honest persons would be compelled to refer to it as the "Bundle/38." Can you imagine an IBM salesman speaking of b-----s to manicured corporate management disdainful of anything so conceptually haphazard or unkempt?

But unlike the past, today's rebundling isn't happening to aid the conduct of pricing shell games by our industry's leader. For as our computer industry races into synthesis with our communications industry, a lot of heretofore independent, but computer-technology-related, things will be tied together in integrated services digital networks (ISDN).

By its very nature, ISDN technology integrates into a unified whole previously disparate technologies, bringing to users the power that computer systems provide. The rebundling results, therefore, from a natural synthesis of previously individualized services, with products both hard and soft, affording great econo-

my of scale. And as the products and services of parties contributing to the creation of dial-tone or power-line hum have been lost from view, so will the now-familiar unbundled product definitions vanish as our reliance upon massive service bureaus of ISDN origin inexorably grows.

AT&T with NET/1000, IBM with Information Network, Warner-Amex, Citicorp, General Electric Co. and others are creating ISDNs; their embryos are now in place. Users will be compelled to abandon the do-it-yourself-kit nature of past computer systems offerings for the highly potent and inexpensive services in these networks. The relief these services will inject into DP environments will far outweigh whatever measure of comfort users might derive from their purchases of competitively priced, unbundled alternatives.

Die-hard holdouts and other skeptics will become converts when they realize that great savings can be achieved through network access to data bases whose creation and maintenance on an individual, data center basis is prohibitively costly.

Creative Tie-In Plans

Until that glorious day when the promise of ISDN technology is realized, accelerated rebundling will occur. And in our new, free-swinging competitive economy, creative tie-in plans are inevitable.

Appearing first as liberalized contractual terms, rebundling will eventually come to include free personnel support, a promise to upgrade on-premises hardware at no apparent

(Continued on Page 36)

HUMAN CONNECTION / Jack Stone

Collegians Not Worried About Job Prospects

With all the sorry news about the worst unemployment since the Great Depression, one would think that job uncertainties would have college seniors shaking in their boots. Not so, much to our surprise. In this column, we describe how some seniors are, using their vernacular, "cool" with respect to job prospects.

Pearl Marshall, a computer science major at a small private college, chose a major in computer science because the field is "where it all is."

"Computers are amazing machines and supply valuable services. From all the recent advertising hullabaloo surrounding micros, I assume they're being purchased in vast quantities. Obviously, a lot of people are needed — now and in the future — for systems design and programming of these machines, and this motivates me to enter the profession."

"My interests in the field are not based on fads or considerations of glamour. I believe that just as electrical engineering, accounting and other vocations lost their glamour after they started to mature, so too will the area of computers. After all, computer applications in the public sector have been routine for a long time

This is the second article in a six-part series, "Computers and the Collegians," coauthored with Joanne Barker.

and represent, in a sense, only the latest technological happening of our society. No, I truly believe that a computer career is the best vehicle for meeting my professional aspirations and salary goals."

Widespread Talk

"I'm also encouraged by the widespread talk about computers," Marshall said. "Everyone seems to have computers in his conversation. I don't mean just on campus, either; I hear about it at home from my dad, who still believes they are too expensive for his business, and from such people as the pharmacist in the corner drugstore who wants me to help him install one to keep track of orders. Computers, I believe, are the wave of the future job market."

Robert Stewart, a philosophy major at a private college, had a different view, based on his desire both to concentrate in a liberal-arts field and

to take some computer courses along the way only because of their general utility.

"Today, computers are a given part of our campus, our home life and our working environment. They are not perceived by students as they are by many in the population at large, namely, as mysterious creatures that swoop down on the nations of the world and subjugate the minds of men."

"The cold facts are that most students, except perhaps the computer science majors, are totally cognizant of the many computer-type jobs 'out there' and want to expand their knowledge of the new technology and improve job skills. But the typical student will not go much beyond the basic courses if the instructional program is so poorly organized as to jeopardize his grade point average."

Twenty Years Ago

"Twenty years ago, deciding on a computer career was like deciding on a career as a physician: In both cases, you were looking at a lot of hard work, long hours and great expense," Stewart said. "Now, we look at computer people as operators of

electronic steam shovels, pushing trash heaps of data around from one pile of information rubble to another. Frankly, I'm not too enthusiastic about becoming a data mechanic even if it does pay well, and if my dad takes me into his business, maybe I won't have to."

"College is too important to me to waste my time fooling around with some Fortran program in a course taught by an instructor who would prefer being away from the classroom spending his time fooling around with his own Fortran program. I would rather invest the few precious years I have in college reading Socrates and discussing his perceptions of morality. Sure I'm sorry I didn't do better in the DP intro courses I've had so far, but they were not very practical anyway."

"I figure I can always pick up the basic skills I need to run one of the electronic shovels after graduation by taking some adult education courses at the local junior college or spending a few weeks on a friend's Apple [Computer, Inc.] computer. What's more, I would expect my future employer to train me in what I don't already know."

Burying Myths

I enjoyed reading the article "Computer Industry Layoffs Widespread, Varied as Electronics Unemployment Jumps to 13.1%" [CW, Dec. 27/Jan. 3]. A very clear cross-sectional picture is given in the article of what has been happening to DP "job stability" as people in the industry would have us believe.

Yet, the plight of those 40 years old and older is tougher than the conditions that are indicated by the article,

though Ron Armstrong of Armstrong & Associates in Houston hinted at their fate.

There were also several employment myths restated by Jo-Anne Rudolph, account executive with CompuSearch Agency recruitment firm, and the Boston employment counselor. The first myth is "Generally speaking, those laid off are

deadwood or incompetent."

A number of questions can be raised with respect to this myth: What is the definition of "deadwood" and "incompetent?" What constitutes evidence of being deadwood and incompetent? Upon what basis is this evidence adjudged?

Other myths brought out in the article are "those who

are really good are not part of the layoff picture" and "the good people will have no trouble finding a suitable position very quickly."

These comments, however, beg the question of what "good" means. Other questions that come up are: Who decided who is "good" and who is not? What standard of measures was used? How

were judgments made, and by whom were the judgments made? What was the caliber of those that were doing the judging?

Before these myths are bandied about as though they represented both valid and sound judgments, a close analysis of them, in addition to perceptive thinking about them, is necessary.

If there is no such analysis, the fallacies of these myths will continue to deceive and mislead us and to generate incorrect conclusions.

It is high time such myths were understood as the clichés they really represent and be buried with enlightened perceptions once and for all.

John Callahan
Arlington, Texas

Rebundling Here to Stay

(Continued from Page 35)
cost, discounted software, free on-line/real-time diagnostics for those who wish to dock their computer systems at ISDN ports and preferential treatment for ISDN clients who bought the whole kit and kab-----

The latter group, provided with the benefits of "green-stamp" credits, the redemption of which will entitle them to reach out and touch someone for the cost of a gherkin, constitutes the vanguard of 21st century computer systems users.

For before the year 2000, we will have decommissioned today's corporate data processing facilities, replaced them with a mass of function-specific terminals and, through the function-specific terminals, linked our companies, our homes and ourselves to massive ISDN supercenters.

The process of rebundling will have reached its logical conclusion. And, with ourselves woven into the resulting bundle, we may pronounce it, at last, respectable.

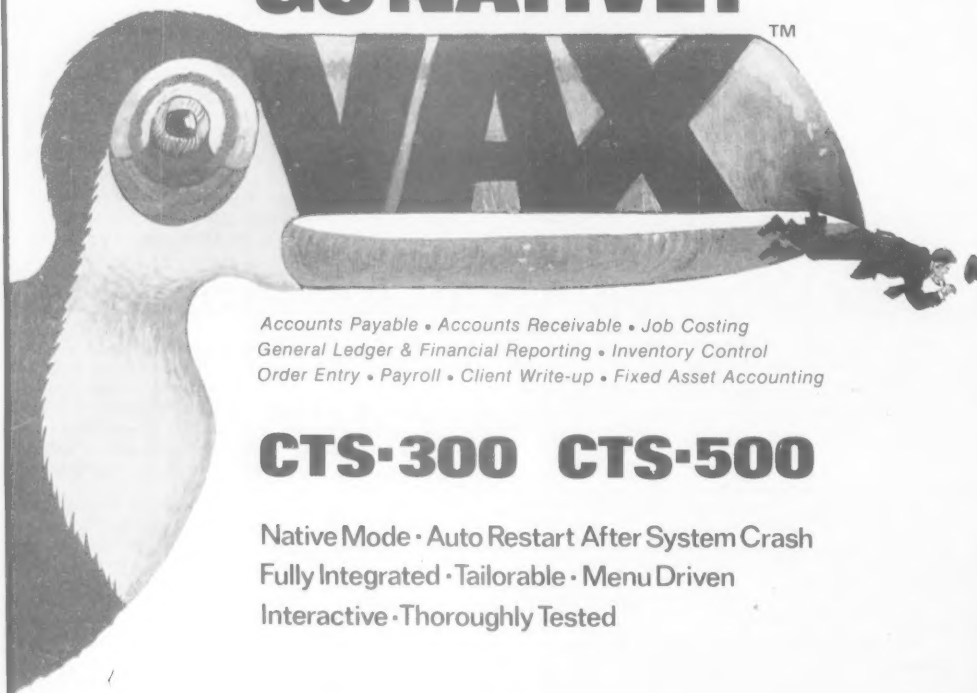
Charles P. Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

AUTOMATIC REPORT WRITER: IBM/34

Call for details about Fusion/1 DataQuisition, an interactive information retrieval and display system for non-technical users.

FUSION
FUSION PRODUCTS INTL.
415-381-1340
Telex 176-089 FUSION MLVY

TO SURVIVE IN THE JUNGLE OF ACCOUNTING SOFTWARE GO NATIVE!



Accounts Payable • Accounts Receivable • Job Costing
General Ledger & Financial Reporting • Inventory Control
Order Entry • Payroll • Client Write-up • Fixed Asset Accounting

CTS-300 CTS-500

Native Mode • Auto Restart After System Crash
Fully Integrated • Tailorable • Menu Driven
Interactive • Thoroughly Tested

Compu-Share

Compu-Share, Inc. 3824 - 50th Street Lubbock, Texas 79413 (806) 792-3785

VAX is a trademark of Digital Equipment Corporation

Handles Money Market Accounts

Bank DP Service Firm Weathers Change

By Lois Paul
CW Staff

BRAINTREE, Mass. — When deregulation allowed banks and savings and loan institutions to introduce money market savings accounts and Super Now checking accounts in December and January, a group of New England banks were ready — in fact, they had been ready for nearly two years.

Mutual Services, Inc. (MSI), a firm that provides DP services for many banks in New England, had anticipated the move

toward money market accounts and had begun work on changing the software to meet these requirements as early as January 1981, according to Executive Vice-President John Tenuta. Assisting this effort was a group of contract programmers from Atlantic Data Services, a services firm based in Quincy, Mass.

Tenuta explained that two years ago several of the MSI banks got together and said they wanted to offer a combination of a demand deposit account and a repurchase agreement. Determining through le-

gal experts that this would be possible, they described to MSI what they would require. "We went out and designed how we wanted to interface with our current demand deposit software, and we said we were going to integrate this repurchase agreement logic into our system, but allowing them to establish interest rates to be changed by the bank on a daily basis," he said.

In January 1981, MSI began working with Atlantic Data Services on the project, and by April, the firm was ready to meet the requirements of a Sweep account that the federal government considered releasing at that time. "It would have been another coup right there to be ready to come out when they were offering it," Tenuta said. "But the whole bill fell through and Sweep account never went into effect. So our banks started to offer the Now account, called Accelerate in the area." He explained that this was basically a Now repurchase agreement, the latter referring to a type of uninsured 30-day certificate.

As the concept of Now and Super Now money market accounts began to evolve in

(Continued on Page 40)

Financial System Introduced For IBM 370, Univac Systems

DOWNERS GROVE, Ill. — Circle Software Corp. has introduced a financial planning and modeling system for use with IBM 370 or Sperry Univac computers.

Called C-Fast, the package produces most business reports requiring calculations or numerical tables including financial forecasting, budget vs. actual, variance reports, inventory reports, job costing, price quotes, sales commissions, population projection and market share analysis, the company claimed.

Features include unlimited data base size; three ways to enter data, including collecting information from other data

bases; checks for missing data; consolidation; two levels of error messages; and customized report generation. Built-in functions provide rate of return, compounding, net present value, lead and lag and spread and round, the company said.

Instructions are similar to those used in preparation of manual worksheets, a spokesman said. Reports are obtained by using English-like commands to specify data and format required.

C-Fast costs \$4,500, including one year's maintenance, from Suite 240, 1100 31st St., Downers Grove, Ill. 60515.

Sun Offers DOS/VSE Service

RADNOR, Pa. — Sun Information Services Co. (SIS) has added an IBM DOS/

VSE service to its VM processing line.

The new offering, called VSE/VM, includes all basic facilities of DOS/VSE and other program products including CICS/VS, DOS/VS Cobol, Interactive Computing and Control Facility and VSE/Vsam. IBM program development tools available include CMS, Xedit, Development Management System and Script, according to a spokesman.

Each client company receives its own DOS/VSE system.

VSE/VM is provided at no charge to SIS/VM users. Average monthly usage charges for SIS/VM start at \$1,000 with no sign-up fee or minimum usage charge, the spokesman said from 280 King of Prussia Road, Radnor, Pa. 19087.

'MIS/OL' Adds DL/1 Interface

OAK BROOK, Ill. — Pansophic Systems, Inc. announced the release of Version 8.0 of MIS/OL, the on-line application development tool designed to operate in an IBM CICS environment.

Version 8.0 will feature an interface to IBM's DL/1 data base management system, large screen support, unlimited number of screens and an unlimited number of fields on a screen, the vendor said. In addition, the product offers new command level interface support, multiple batch load and an increased number of maximum data sets. It also is said to incorporate improved error messages as well as support for IBM 3375 and 3380 disks and Vsam alternate key processing. MIS/OL reportedly provides a security system and input source screens.

MIS/OL is priced at \$18,000 for DOS systems and \$26,000 for OS systems. Pansophic is located at 709 Enterprise Drive, Oak Brook, Ill. 60521.

SOFTWARE & SERVICES

'Model' 6.0 Bows

NEW YORK — Lloyd Bush and Associates has announced Release 6.0 of its Model financial planning package. The software runs on Honeywell, Inc. DPS 8, Level 66 and 6000 series processors.

The package features capabilities for basic budgeting, an on-line editor, What If analysis and a full math library.

The package costs between \$9,000 and \$130,000, depending on the modules purchased, the vendor said from 156 William St., New York, N.Y. 10038.

OOPS!

There was a comma missing in a program for the Apollo Rocket. The Rocket crashed.

Now we're not suggesting that a single CICS program will ever cause that much damage. But programming errors and unresolved bugs in your CICS programs are costly. Both in lost time and wasted resources.

CA-EZTEST, our new interactive CICS program productivity and development tool for OS and DOS, eliminates those problems.

When a problem orabend is about to occur in a test program, CA-EZTEST stops the program before any damage can occur to CICS storage or other programs.

And that's only the beginning. It explains why the program stopped. What type ofabend occurred. And which statement was involved.

With CA-EZTEST you'll get control of your CICS environment, productivity will increase and new programs will be developed faster and more reliably. Testing that might have taken weeks can be completed in a single session.

Call: (800) 645-3003 In NY call: (516) 333-6700 or send in coupon

 **COMPUTER ASSOCIATES**

COMPUTER ASSOCIATES INTERNATIONAL, INC.
125 JERICHO TPKE. JERICHO, N.Y. 11753

Please send me more information on CA-EZTEST.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____ CPU _____ OS/VS _____

**COMPUTER ASSOCIATES
INTERNATIONAL, INC.**
125 Jericho Tpke. Jericho, N.Y. 11753

CW 1/24/83

'Sourcemanager,' 'Designmanager' Announced

LEXINGTON, Mass. — An on-line, dictionary-driven Cobol application development system and a data base modeling system for IBM OS and DOS environments have been introduced by Manager Software Products, Inc.

Sourcemanager is said to include a program view dictionary that contains the definition of available programs, a program generator, a reusable source language and a quality assurance facility which can detect and correct violations of standard or style. Programming aids include ability to shorten and expand automatically frequently used keywords, a spokesman said.

Designmanager is based upon a modeling dictionary which allows input and output with user-defined features, the spokesman said. Features include Help screens and definitional query and documentation facilities to support data analysis from the top down and the bottom up. Additional support features include control facilities, memory management with a disk overflow facility and interfaces to popular teleprocessing monitors, the vendor said.

The nucleus price for Designmanager is \$13,500 with user-selectable units for interactive front-end processing, user-formatted output

and integration to the company's Datamanager data dictionary priced at \$4,300. Sourcemanager costs \$13,500 with selectable units for re-

usable source language, an interface to Applied Data Research, Inc.'s Librarian, interface to Pansophic Systems, Inc.'s Panvalet and an inte-

grator to Designmanager priced at \$4,300 each. The company is located at 131 Hartwell Ave., Lexington, Mass. 02173.

Due-Out Factor Added to 'DCMS'

CHERRY HILL, N.J. — A new release of the Data Center Management System (DCMS) has been unveiled by Value Computing, Inc. Major enhancements are said to include the addition of a "due-out factor" to the scheduling component and the ability to validate job control language (JCL), with the JCL validation option operating independently of the system's on-line job submission facility.

DCMS runs on IBM and plug-compatible mainframes, as well as equipment from Burroughs Corp., Sperry Univac and Honeywell, Inc.

The due-out factor reportedly allows users to submit jobs to the current day's

schedule even though the job may not be processed until a later day. The newest extension to the JCL validation option enables users to perform syntax checks on jobs that are not part of the production schedule.

Prices for the full DCMS package, consisting of sched-

uling, on-line data base maintenance and job tracking and automatic job submission, start from \$39,000 (IBM VSE version) and \$64,000 (MVS). The JCL validation option costs an additional \$5,900 from the vendor at 498 N. Kings Highway, Cherry Hill, N.J. 08034.

'DB-Analyze' Updated For Intel System 2000

ELGIN, Ill. — Garman Consultants, Inc. has announced a new release of its DB-Analyze performance monitoring and tuning aid for Intel Corp.'s System 2000 data base management system.

Release 1.1 reportedly adds three new reports for record scattering. One gives a bar graph view of record scattering for each node in the hierarchical and data tables. A second depicts record scattering if the data base were reloaded and the third gives the I/O savings if the data base were reloaded.

Also added are three reports that analyze Intel's Multiple Occurrence Table (MOT) padding for each key in the data base. The first shows current padding, the second predicts padding if the data base were reloaded without changing the current padding specification and the third reveals the padding for each of four specifications if the data were reloaded.

DB-Analyze is available

for IBM OS installations. The current license fee is \$7,000 from the firm at 143 Brookside Drive, Elgin, Ill. 60120.

Point 4 Enhances Iris

IRVINE, Calif. — Point 4 Data Corp. has brought out Version R8 of its Iris operating system for the firm's Mark 3, Mark 5 and Mark 8 computers and compatible machines such as Data General Corp.'s Nova 3 and Nova 4.

Iris R8 introduces Polyfiles, an upward-compatible extension of Point 4's indexed random data files, said to support multiple-volume files of up to 2T bytes. Each file can have up to 16 directories that store keys up to 121 bytes in length. Search statements permit records to be located on a random or sequential basis by matching a search key against keys stored in any of the directories. Polyfiles addresses the limitations on the Iris directory that had become a prob-

lem for users with very large files, the vendor said.

Also provided is an improved software security system through the support of coded Pico-N, a new version of the firm's proprietary software protection device. The security system reportedly permits users to control the distribution and use of their proprietary application packages.

Iris R8 was designed to operate on all Point 4 computers that support earlier versions of Iris and Point 4 products such as the Stylus and Typist word processors, the Force application generator and the Lotus cache memory.

Iris R8 costs \$5,400 for volume buyers. Point 4 is located at 2569 McCabe Way, Irvine, Calif. 92714.

Give your 11/23 "PLUS-POWER" with CATCH-23

Software converting Q-bus systems to full 22 bit memory specifications

☐ Allows system expansion up to 4 mbytes memory.

☐ Uses existing 18 bit tape/disc controller hardware.

WHY BUY EXPENSIVE HARDWARE? CONTACT:

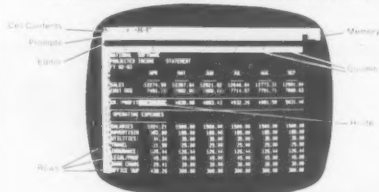


EEC SYSTEMS INC.
DEPT. COW
MILLBROOK PARK
327/E BOSTON POST RD.
SUDBURY, MA 01776

PUT OUR SOFTWARE TO THE TEST: CALL (617) 443-6376/5106

DATA CALC™

THE MOST IMPORTANT TOOL A DECISION MAKER CAN HAVE



Replaces pencil, calculator and column pad

THE FRIENDLY ELECTRONIC SPREADSHEET

Easy to Learn
Well Documented
Powerful
Build Personal Applications

CTS-300 CTS-500 DBL/TSX-Plus
DEC Computer Systems

For more information call or write:

DATATREND

395 Ironwood Drive
Salt Lake City, Utah 84115
(801) 487-0531

WHAT IS FASTER
AND MORE POWERFUL
THAN A TSO CLIST??

PROC MAN!

PROC MAN:

- COMPILES TSO CLISTS
- REDUCES CLIST RUN TIMES
- GREATLY REDUCES CLIST CPU OVERHEAD
- PROVIDES MULTI-LEVEL SECURITY BY CLIST
- ALLOWS EASY ADDITION OF USER FUNCTIONS
- REQUIRES NO SYSTEM OR CLIST MODIFICATIONS
- ENHANCES THE SPF DIALOG MANAGER

STONE
Software Corp.

Call or write
1735 SOUTH BROOKHURST
ANAHEIM, CA 92804
PHONE (714) 991-9460
TELEX 181592



VCI Adds SMF Link, Dasd To Billing System for 370s

CHERRY HILL, N.J. — Value Computing, Inc. (VCI) has announced Release 8.0 of Comput-A-Charge, its job accounting and billing system for IBM 370 and larger systems, as well as plug-compatible mainframes running under OS/VS. Major enhancements include a redesigned System Management Facility (SMF) interface and the Direct Access Storage Device (Dasd) Space Accounting subsystem, the vendor noted.

Comput-A-Charge's SMF interface reportedly now handles very long-running jobs completely, is automatically restartable and provides diagnostics. Its tailoring language allows end users to define configuration and job characteristics directly to the Comput-A-Charge data base. Tailor-

ing statements can be stored in the data base for automatic execution with each interface update, the vendor said.

The Dasd Space Accounting subsystem is said to gather and report track and volume statistics for resident volumes and handles Vsam as well as non-Vsam files. It also makes available disk usage information that the SMF was not designed to capture, the vendor said.

Comput-A-Charge (OS/VS) costs \$14,000, a spokesman said. Optional subsystems for IMS, CICS and CMS are also available from VCI at 498 N. Kings Highway, Cherry Hill, N.J. 08034.

Documentor Fits OS/VS, DOS/VS

ESMOND, R.I. — An Automated Documentor for systems running under IBM OS/VS and DOS/VS has been developed by Paul Newcum Business Applications.

The documentor will reportedly provide documentation directly from source programs and JCL. The user feeds in untouched BAL, Cobol, CICS and DL/I programs and their JCL.

Jobs, programs, data sets and records are listed in summary fashion for reference to the major elements in the user's system, the vendor claimed. Processing details include the size of the application program, kinds of file organizations used, blocking factors, I/O processing and the source of data sets from previous steps in the same job.

Until April, the software is available at a 35% introductory discount price of \$5,525, after which time it will cost \$8,500. The firm can be reached through P.O. Box 5185, Esmond, R.I. 02917.

'Soft-Aids' Out For Wang's VS

SEATTLE — Software Extraordinary, Inc. has released Soft-Aids, a series of software utilities for the Wang Laboratories, Inc. VS line of computers.

Thirteen separate utilities are available including print queue enhancement; a computer-assisted messenger service; hard-copy message capabilities for background tasks; IBM 3270 emulator cluster sharer; batch and on-line file scheduling/transfer with autorecover; enhancement to backup and restore capabilities; tape management system; enhancement to system security administration; disk space management system; autoscheduling/run of batch jobs; advanced menu generator with computer use/time accounting; remote workstation manager and executive secretary functions.

Prices vary from \$160 to \$3,680, the vendor said from 1419 8th Ave. W., Seattle, Wash. 98119.

HERE'S WHAT YOU CAN SAVE ON EVERY TIME-SHARING DOLLAR YOU SPEND.

At Budget Time-Share, you can cut back on spending in this tight-money economy, without tightening your belt. We'll save you as much as 60% of your time-sharing dollar — on the CPU, on communications and on storage. And that means enormous savings from your monthly bill now on.

BETTER SERVICE, TOO...

Budget does more, however, than save you money. We uphold the solid virtues that made time-sharing so appealing from the start: ease of use, dependable service and real solutions to everyday business problems. In fact, a recent marketing study showed that although most of Budget's customers joined for price reasons alone, they later cited Budget's service as a significant benefit.

We can serve you in your city, twenty-four hours a day, seven days a week. And what's more, we'll give you your own dedicated team of support specialists to consult with you on a regular basis, at no extra cost.

Budget 

4739 Alla Road
Marina del Rey, CA 90291
(213) 821-5973

*Registered product of SAS Institute, Inc.
**Registered product of Applied Data Research, Inc.

FOR THE
INFORMATION
CENTER

NOW THERE IS
ISPF (SPF)*
for END USERS

INTRODUCING
AN INTERACTIVE COURSE (CAI)
SIMULATING THE FEATURES OF ISPF

*ISPF IS A COPYRIGHTED PRODUCT OF IBM CORP

Yes, I'd like more information about the new ISPF course and your other courses!

NAME _____

COMPANY _____

ADDRESS _____

TITLE _____

PHONE _____

CRWTH COMPUTER COURSEWARE

613 Wilshire Blvd., Suite 200
Santa Monica, CA 90401 (213) 391-4788



YOU'LL BE IN GOOD COMPANY...

With such a combination of value and service, it shouldn't be surprising that our user group reads like a "Who's Who" of the Fortune 500. No matter what the application — banking, insurance, aerospace, marketing, finance — we've been helping businesses and departments like yours get the most out of their computing budgets. And we've amassed a comprehensive software library that includes all the

leading packages, such as SASTM and EMPIRETM. So you get the right software for the job.

GET THE DETAILS...

If you or others in your company are presently using time-sharing, or planning a new computer application, call us toll-free or mail in the coupon. And start saving. You'll get all the benefits of time-sharing at a better price than ever before.


(800) 227-1617 ext. 333
In California (800) 772-3545 ext. 333

Name _____

Co. Name _____

Address _____

Phone () _____

Budget 

TIME-SHARE

4739 Alla Road Marina del Rey, California 90291 (213) 821-5973

General Ledger Fits HP 3000

OTTAWA — Quasar Systems Ltd. has developed an on-line general ledger (GL) package for the Hewlett-Packard Co. HP 3000 minicomputer.

The Multiview GL package is said to allow users to view business information from multiple perspectives at any user-defined level of detail without recoding.

Comparisons, multiple consolidations and project, product or line-of-business reporting are said to be possible. A major feature of the package is the Multiview Financial Report Writer, a built-in spreadsheet-type report writer.

The software costs \$18,000 from Quasar at 275 Slater St., Ottawa, Canada K1P 5H9.

WIPED OUT FILE the data Clobber base Agony of Delete LATENT BUG

These can be the bitter results of errors by today's computer software professionals. The financial and legal implications can be far-reaching and devastating. Judgments resulting in the millions of dollars are not uncommon. That's why it pays to be protected by...

Software Professional Liability Insurance!

J. H. Ferguson & Associates offers a Professional Liability Insurance Program specifically designed for the computer software industry. It provides coverage for Negligent Acts and Errors & Omissions arising from your professional services. Reasonably priced, it's protection you can't afford to be without.

For additional information and an application for a free quotation, simply fill out and return the attached coupon.

Yes, please send me information concerning your Professional Liability Insurance Program.

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____



**J. H. FERGUSON
& ASSOCIATES**

SURPLUS LINES UNDERWRITING MANAGERS

P.O. Box 3016 • Evanston, Ill. 60204

DEC, Softool Unveil VAX Facility

MAYNARD, Mass. — Digital Equipment Corp.'s Laboratory Data Products Group here and Softool Corp. of Goleta, Calif., announced the availability of the Softool interactive software development and control facility for VAX systems.

For IDS-II, Pride-ASDM

Honeywell Users Get Link

CINCINNATI — M. Bryce & Associates, Inc. has announced an interface between the Honeywell, Inc. Integrated Data Store (IDS-II) product and its Pride-Automated Systems Design Methodology (Pride-ASDM).

At the heart of the Pride-ASDM software is the Information Resource Manager (IRM), which catalogs and cross-references data, systems and organizational components, according to the vendor.

Based on the specifications resid-

The Softool Programming Environment represents a methodology for software management, development and maintenance. Running under DEC's VMS operating system, the package is said to support a distinction between the host environ-

ment, where the software is developed and controlled, and the target environment, where programs are executed.

A Fortran programming environment is currently available, with a Cobol version forthcoming. A permanent license costs \$60,000 from both vendors and includes one year of maintenance by Softool.

DEC is based in Maynard, Mass. 01754. Softool is located at 340 S. Kellogg Ave., Goleta, Calif. 93017.

ing in the IRM, the IDS-II Interface reportedly generates the schemata and subschemata necessary for the implementation of an IDS-II data base.

Pride-ASDM is currently operational on more than 20 machines, including Honeywell Series 60 L66, Series 6000 and DPS-8 mainframes. Pride-ASDM costs \$80,000. The IDS-II Interface costs \$7,000 from 1248 Springfield Pike, Cincinnati, Ohio 45215.

Firm Handles Super Nows

(Continued from Page 37)

the banking industry. MSI started talking with Atlantic Data Services about the various changes to software that would be necessary. "Not until the beginning of November 1982 did we actually have the changes defined, and they began programming on them," Tenuta said.

MSI met the dates for the Now account changes by Dec. 15, so its banks were able to begin advertising the new offerings by Dec. 1. Tenuta credited the work on the original Accelerate product for its early start. "Customers were able to put the money into those [Accelerate] accounts and transfer it into the money market accounts as of Dec. 15."

Tenuta described the implementation of the changes for the current Now accounts as a "chess move" for MSI. "Instead of us making only two moves, we had planned that whole thing to evolve into a very flexible rate change system where what we considered multiple groups of accounts could be associated by what we call the plan code." The latter basically defines how an account or a group of accounts will function. MSI and Atlantic Data Services associated groups of accounts with a rate that could be changed daily, if necessary. The Now and Super Now accounts involve weekly or monthly changes in interest rates.

"The changes in April were very extensive," Tenuta said. "The project itself was a major rewrite, an interface to the demand deposit package. We did not set up two separate accounts. We set up a single account and interfaced it to our demand deposit package. The changes that were made in December were additions to those changes made in April."

Tenuta stressed that the changes could not have been made in such a timely fashion without the help of Atlantic Data Services and its familiarity with the MSI system.

MSI has a history of using outside programmers to assist its core staff of 10 programmers with the myriad of software changes they frequently are asked to make. "One of the things we

found out is that banking regulations have had a tremendous effect on our ability to meet the dates our customers wanted. If a regulation comes out in January, it has to be in by February," Tenuta continued. "If we try to go in and use our own staff, the time frames themselves don't always allow us to do that. Sometimes it takes a little bit longer to analyze and schedule the people."

For this reason, MSI spends between \$100,000 and \$200,000 per year on contract programming services. About three years ago, the firm began working with Atlantic Data Services. "Any contract programming group is not a solution to your problem of resources," he cautioned. "It has to be someone who understands the software and your business." Atlantic Data Services provides technicians with banking and financial backgrounds.

FRS/34 Released For System/34

ROCK ISLAND, Ill. — Valley Software, Inc. has announced a financial reporting system (FRS) for the IBM System/34 Manufacturing Accounting and Product Information Control System, Construction Management Accounting System and Distributors Management Accounting System general ledger modules.

Called FRS/34, the system is said to provide financial statements for up to 11 months into the new fiscal year without closing the previous year. It also provides inquiry into general ledger master files for details by period, current budget, current only and history, a spokesman said.

The package maintains four working budgets and three complete years of history and can produce trial balances and financial statements by company or by company and account or groups of accounts.

A one-time license fee costs \$1,250 from Valley Software, Inc. at 708 34 Ave., Department B, P.O. Box 909, Rock Island, Ill. 61201.

Now a DEC/IBM interconnect that's cost effective

Your DEC computer has more important things to do than be a processor for your IBM communications. Save valuable computing capacity by handling this interconnect workload with COMBOARD™.

To your operators, COMBOARD is a reliable package that doesn't decrease the number of on-line users.

To your users, COMBOARD is a simple link to IBM systems for job and data transfer.

COMBOARD

To your management, COMBOARD is a cost-effective solution to a troublesome problem.

COMBOARD models 631, 731 and 1231 support transfer rates from 4,800 to 56K baud. They are the leaders in DEC/IBM and DEC/CDC interconnects.

For more details contact your sales representative at Software Results at 614 421-2094 or mail the coupon today.

SOFTWARE RESULTS CORPORATION

1229 West Third Avenue
Columbus, OH 43212-3090
Telephone: 614-421-2094

Send me more information on COMBOARD™

Name _____

Company _____

Address _____

Telephone _____

COMBOARD™ Software Results Corporation
DEC UNIBUS™ Digital Equipment Corporation

A28

TECHNOVATION: MANTIS.

Study Shows MANTIS the Premier Application Development System

Application Development System (ADS) technology can do more to increase overall programmer productivity, reduce maintenance costs, and solve the severe application backlog problem than any other single software product.

But in a marketplace flooded with products to address this need, your choice of an application development system can be a difficult task.

Recently, the Merlyn Corporation completed the industry's first exclusive study* on eight available ADS software systems. And this study clearly confirms what Cincom users already know. MANTIS is decidedly the winner.

Among the three most widely used systems—MANTIS, DMS and UFO—MANTIS led every user satisfaction category: productivity enhancement, on-line performance, ease of learning, ease of use, documentation, support and reliability. And in the most important category—"Overall Capabilities"—MANTIS was again the winner.

User satisfaction? 33% of DMS users said they would not recommend their system to others. Among UFO users, 6% would not recommend theirs. For MANTIS users, not one single user said no.

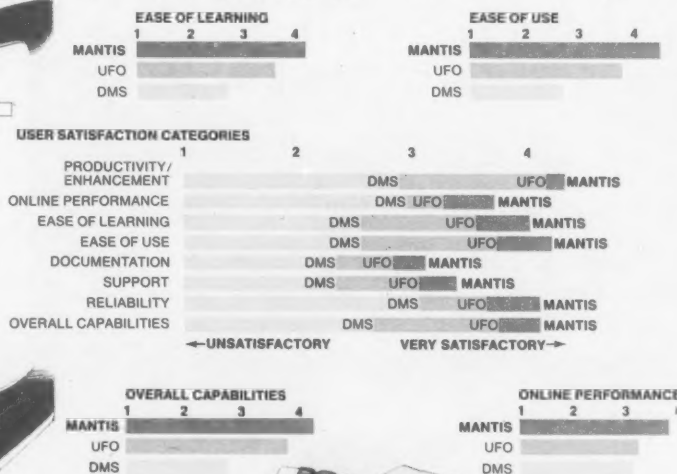
Further evidence of MANTIS' superiority is the overwhelming industry acceptance. In only 18 months since its introduction, MANTIS has gained 11% of the total ADS market share. That's a substantially higher growth rate than all of the other seven systems studied.

But while we're very pleased to be the runaway winner, we're even more pleased that MANTIS is becoming the industry standard for on-line programming. 84% of MANTIS users develop 91-100% of their applications with the system. Only 67% of DMS users reported such high usage. With UFO, the figure plummeted to only 48%.

These are merely the highlights of the conclusive Merlyn Study. But the findings are clear. When it comes to application development systems, MANTIS is in a class by itself.

MANTIS is another of the many solutions developed through Cincom's commitment to technology and innovation—TECHNOVATION. Using the power of MANTIS' 4th Generation Language, you can look forward to:

- dramatically increased CICS and ENVIRON/1 programmer productivity
- improved user involvement and satisfaction through sophisticated prototyping techniques.



*"CICS Application Development Systems: The Comparative Consumer Report." Written and published by MERLYN CORPORATION. Survey data from Focus Research Systems, Inc. 1982.

For more detailed information on MANTIS, Cincom's powerful new application development system, contact our Marketing Services Department, 2300 Montana Ave., Cincinnati, OH 45211

800-543-3010

(In Ohio: 513-661-6000.)
(In Canada: 416-279-4220.)

 **Cincom Systems**
Your strategic software partner.

Data Service Converts IBM System/34 to /38

DURHAM, N.C. — Sysgen, Inc. has announced a service to convert IBM System/34 data and programs to run on a System/38.

The company accomplishes the conversion through direct code conversion, external definition of files for use in a data base environment, rewrite of interactive programs and rede-

sign of application programs.

A firm with a well-structured program package and documentation can anticipate a cost of 15 cent/line to 20 cent/line of code. Redesign and writing of RPG programs may cost from \$1/line to \$1.50/line. Sysgen is located at Suite 110, 3001 Academy Drive, Durham, N.C. 27707.

Utilities Released for Wang's VS

RALEIGH, N.C. — Southern Data Systems, Inc. has released three utilities for the Wang Laboratories, Inc. VS line of computers.

Ezscreen creates and modifies user-defined screens. The package works in conjunction with Wang's Ezformat utility and allows users to make screen changes without redefining the screen. The product remembers all field names and their positions and prompts the

user for only the modified field names.

Ezscreen allows full 32-char. field names. Default library and volume names can be specified for automatic saving of Ezscreen-generated files. The utility costs \$249.

Backlib and Backfile operate as system utilities and require two steps to back up the desired libraries or files. They allow the user to "check off" the material to be backed up from a display of

all the libraries or files on the specified source volume. The utilities then perform complete backup of all selected libraries or files to the specified volume.

Backfile and Backlib are available together for \$99, the vendor said from 5109 Holly Ridge Road, Raleigh, N.C. 27612.

System/38 Gets Package

INDIANAPOLIS — Packageddeal, Inc. has announced an accounts payable and general ledger package for IBM's System/38.

The accounts payable segment of the package features multilevel company accounting and inquiry features.

The general ledger package includes multilevel accounting and a full-function report writer.

The package costs \$2,450, the vendor said from 4810 Graceland Ave., Indianapolis, Ind. 46208.

More versatility than ever
with Lee Data's 3270 terminal system

Integrated
Personal Computing



Lee Data's new Personal Workstation now lets you enjoy all the advantages of professional business computing plus have both 3270 and asynchronous access to CPU-based applications—all from the same Lee Data workstation!

That's right! Completely integrated, IBM-compatible personal computing—offering the latest functional capabilities and these value-added features:

Support for a wide variety of popular applications, including all compatible IBM Personal Computer software.

Personal Workstation-to-host file transfer capabilities that allow transfer of data from CPU-based files through existing system communications net-

works, meaning no new communications networks are ever required.

A single board design that incorporates both display station and printer support, as well as 128K of random access memory standard—with up to 256K of expanded memory on the same board. Plus a dual diskette drive feature that offers two 5¼-inch floppy diskettes, each with 320K of storage capacity!

And four standard system expansion slots for add-on requirements as your needs change.

3270 and asynchronous application access and now personal computing, too—all part of an advanced system design by Lee Data.

Let us show you how easily personal computing can become a part of your company's terminal system.

Call our system specialists toll free:

800/328-3998

Designers of innovative systems
for the information worker

**LEE DATA
CORPORATION**

10206 Crosstown Circle
Minneapolis, MN 55344

FRANCHISE OPPORTUNITIES.



**IT'S
NEVER BEEN
A BETTER
TIME!**

The computer industry is experiencing a spectacular growth. By 1990 it will become a 20 billion dollar industry. Computer retailing was one of the few industries not seriously effected by the recent economic crisis.

Now... is a good time to consider a franchise opportunity with MicroAge, a leader in computer retailing. MicroAge has a proven "track record" with over thirty franchised stores throughout the United States and Canada, in an industry where experience is crucial. MicroAge has it, with six years computer retail experience and three years in franchising. It's just good sense to go with a leader.

If you're committed to success in computer retailing, it's essential you evaluate the MICROAGE COMPUTER STORES Franchise opportunity. Investment: \$130,000-\$200,000.

For detailed information about MicroAge "Franchise Opportunities," call (602) 968-3168 or write to:

MicroAge Computer Stores Inc.
1425 W. 12th Place
Tempe, AZ 85281

**MicroAge
COMPUTER STORE**
"The Solution Store"

Attention:

Data base administrators
IMS-DL/I programmers
SAS users

SAS/IMS-DL/I saves you time

Product Sales Summary
Data for 1983

Product Code A100 - WIDGETS

			Region of U.S.			
			North Central	Northeast	South	West
City Size Over 500000	Quantity	Total	17057	15045	13277	12603
	\$ Amount	Total	26757.94	24040.36	18853.55	16777.59
		Percent of Regional Sales	55.8	42.9	47.4	50.8
50000 to 500000	Quantity	Total	9012	13509	13280	11605
	\$ Amount	Total	13787.06	22071.22	20954.00	14210.25
		Percent of Regional Sales	28.7	39.4	52.6	43.0
Under 50000	Quantity	Total	4048	5131	None	1811
	\$ Amount	Total	7428.34	9944.05	None	2034.05
		Percent of Regional Sales	19.5	17.7	None	6.2

Replace your lengthy COBOL, PL/I or assembler programs with SAS/IMS-DL/I,™ a high-level programming language for accessing and maintaining DL/I data bases.

Data base administrators: With SAS/IMS-DL/I you can test many structures as you design or modify data bases. Use SAS/IMS-DL/I to build test data bases, convert data bases from one structure to another, rearrange fields within segments, verify DL/I call sequences in program specifications and correct data in existing data bases.

IMS-DL/I programmers: Implement batch IMS-DL/I applications—data base maintenance programs or data report programs—with SAS/IMS-DL/I. Use IMS-DL/I logging to insure data base integrity and recoverability.

SAS users: Write SAS/IMS-DL/I programs to extract data directly from DL/I data bases without an IMS programmer.

SAS/IMS-DL/I—the kind of powerful time-saver you've come to expect from SAS Institute.

SAS Institute Inc., SAS Circle, Box 8000, Cary, NC 27511 USA. Phone (919) 467-8000. Telex 802505.

SAS Institute GmbH, Rohrbacher Strasse 22, D-6900 Heidelberg 1, West Germany. Phone 06221-29014. Telex 461581.

SAS Software Ltd., The Centre, 68 High Street, Weybridge, Surrey KT13 8BL, UK. Phone 0932-55855. Telex 946138.

SAS Institute (NZ) Limited, PO Box 10-109, The Terrace, Wellington, New Zealand. Phone (4) 727-595. Telex NZ 31525.

SAS Software Pty. Ltd., Level 60, MLC Centre, 19-29 Martin Place, GPO Box 4345, Sydney, NSW 2001, Australia. Phone (02) 235-2199. Telex AA 71499.



IEEE Approves Test Documentation Standard

NEW YORK — A software test documentation standard has been approved by the Institute of Electrical and Electronics Engineers (IEEE) for submission to the American National Standards Institute. The standard reportedly describes a set of basic test documents and specifies the form and content of each document in the set. The set includes test plans, test design specifications, test case specifications, test procedure specifications, test item transmittal reports, test logs, test incident reports and test summary reports. A complete example of each document is included in an appendix. The documents are intended to be used at all levels, from module testing through user acceptance.

The standard will be available in the first quarter of 1983 from the IEEE Standards Board, 345 E. 47th St., New York, N.Y. 10017. IEEE also announced that a working group is being formed to examine the feasibility of standardizing one level of the process itself. The group will focus on

unit testing and attempt to determine if consensus can be reached on a standard for the various tasks involved in testing a computer program.

IEEE membership is not required for membership in the working group. The first meeting will take

place Feb. 16-18 at the National Bureau of Standards in Washington, D.C. The second meeting is scheduled for May 23-25 in San Francisco. Further details can be obtained from David Gelperin, Software Quality Engineering, 2425 Zealand Ave. N., Golden Valley, Minn. 55427.

I.P. Sharp Adds Disclosure II to Library

TORONTO — I.P. Sharp Associates has enhanced its financial data base library with the addition of Disclosure II.

The Disclosure II data base includes current and historical corporate statistics and textual information for over 8,500 publicly owned com-

panies that have files with the U.S. Securities and Exchange Commission. The data for each company in the Disclosure II data base is composed of two types of information — numeric and textual.

The numeric portion contains two years of annual balance sheet items

and three years of annual income statement items as well as quarterly income statements for the current filing year. The textual portion includes company name and address, details on officers and directors, segment data, auditor's names, subsidiaries, exhibits and corporate events, the vendor said.

There is no up-front subscription fee for the use of the Disclosure II data base. Users are charged a small surcharge only for the items of information actually retrieved. Timesharing rates of \$1/hour connect time, 25 cents to 45 cents per/CPD used and 70 cents per thousand characters are paid to I.P. Sharp Associates, with no minimum monthly fee.

I.P. Sharp is located at Suite 1900, 2 First Canadian Place, Toronto, Ontario, M5X 1E3.

SEL Users Get Debugging Aid

GOLDEN, Colo. — Interactive Solutions, Inc. has announced a debugging and instrumentation package for users of the Gould SEL computer system.

Called AID, the package reportedly includes a subroutine call stack, which lets the user know the currently executing routine and complete calling sequence. The package also includes automatic program instrumentation, recording of instruction history and monitoring of program variables without modification of source code, the vendor said.

The package costs \$8,400 from Interactive Solutions through Box 10648, Edgemont, Golden, Colo. 80401.

ADD TWO NEW LEVELS OF ACCESS SECURITY TO YOUR DIAL-UP COMPUTER SYSTEM.

Unauthorized computer access. A nightmare for large companies. And a potential disaster for small ones. But not anymore. Because "The Defender" adds two new levels of access security to dial-up data lines.

This state-of-the-art access control system provides the latest advancements in computer security. In addition to normal password techniques, The Defender demands a second access procedure. In a digitized voice, it asks the user for a personal ID code — which must be entered via touch-tone telephone.

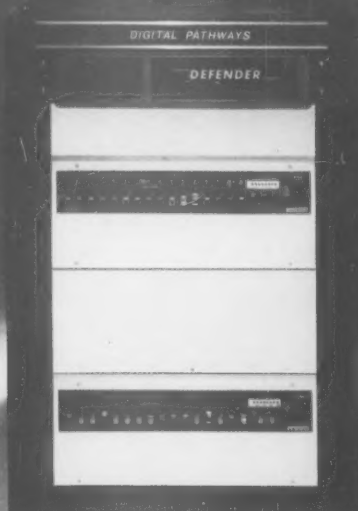
Then, it provides what is probably the most significant advance in computer access security. The Defender searches its database for that ID code, then automatically calls the user back at the one telephone number authorized for that code. Even if an unauthorized

user does manage to break the log-on procedures, he must also be physically located at the telephone number which corresponds with the user's ID code — a highly unlikely occurrence.

The Defender installs on any host computer, with no software or hardware modifications. It uses Rocal-Vadla's advanced "Multiline Automatic Calling System," which can accommodate up to 59 simultaneous users — at speeds up to 9600 bps.

So if you've got a computer that's a little too friendly with strangers, look to The Defender. For more information, write for our brochure at: Digital Pathways, 1060 East Meadow Circle, Palo Alto, CA 94303. Or call us at (415) 493-5544. TWX: 910-379-5034

**DIGITAL
PATHWAYS**



**THE DEFENDER.
SO YOUR COMPUTER WON'T TALK TO STRANGERS.**

United States Headquarters: (415) 493-5544 • Eastern Regional Office: (301) 997-8886 • Canada: (403) 286-2744
England: 0403 813 813 • Germany: (089) 60 60 71-72 Telex: 5216290 Isid d • Switzerland: 022/310567 Telex 289181

FOCUS Education

Course Offerings

- FOCUS Query Language for DP Personnel
- FOCUS Query Language for End User Personnel
- Advanced FOCUS Concepts

Public, In-House, Consortium Formats

For more information, call Joe Wehr at (203) 646-3264.

We make every bit count.

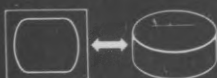
DBMI

Data Base Management, Inc.

1075 Tolland Turnpike
Manchester, CT 06040

FOCUS is a trademark of Information Builders, Inc.

IMS ENHANCEMENT SERIES



SCREEN
PLUS

**"Screen Plus
generates
MFS source
in minutes."**

— DON ODOM
BMC Product Support

SCREEN PLUS

IMS VS 1.1.5-1.2 • 7-Color Support
3270 All Models

- Add color to existing formats.
- No MFS education required.
- Preview screens before creating MFS blocks.

SCREEN PLUS generates MFS source from scratch in minutes. SCREEN PLUS can also generate MFS source from a format library or modify MFS source you are currently using.

Now, IMS application formats can be seen as developed and modified on a 3270 CRT **before** generating MFS source. Once a format is approved, SCREEN PLUS automatically generates **error-free** MFS source. By eliminating the clerical effort, SCREEN PLUS saves days in the MFS application development cycle.

**SCREEN PLUS... MFS source
your user wants—the first time.**

Call or write:

**BMC
SOFTWARE**

P.O. Box 2002
Sugar Land, Texas 77478
(713) 491-8800
Telex 62107450

In Australia and New Zealand Contact:
AMDAHL DIVISION FAL
27 Palmerston Crescent
South Melbourne 3205
Phone 690 7322 Telex AA 35201

Please contact me with more information
on SCREEN PLUS.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

TELEPHONE _____

Clip and Mail to: **BMC Software**
P.O. Box 2002
Sugar Land, Texas 77478

Mega System's DDS Gets Graphics Module

EAST LANSING, Mich. — The Prime Computer, Inc. minicomputer version of Mega Systems, Inc.'s Decision Support System (DSS) now includes a printer graphics module.

The module provides graphics representation of data without requiring additional specialized hardware. It offers 14 different varieties of bar, line and pie charts.

An overlay option allows the combination of bar and line graphs within a single graph presentation.

Mega DSS Graphics is available as an addition to Mega DSS for \$1,000/package licensed to Prime users.

Mega can be reached through P.O. Box 151, East Lansing, Mich. 48823.

Budget Time-Share Offers VIP Service to Its Users

MARINA DEL REY, Calif. — Budget Time-Share, Inc. is strengthening its emphasis on service and support with

MILWAUKEE — Agridata Resources, Inc. (ARI) recently announced the operation of its on-line interactive Agristar information system for "one of the last untapped areas for computing" — the agricultural community.

Agristar was developed to meet this growing market

and reportedly can be used with any Ascii-based communicating microcomputer or data terminal to give farmers, ranchers and other agricultural businesses instant access to financial, business, marketing, weather and news information.

Users reportedly are able to access this information from ARI's central data base in Milwaukee via telephone lines connected to the company's Honeywell, Inc. mainframe.

ARI receives its information from various data-gathering organizations, including agriculture industry publishers, meteorological services, commodity brokerage houses and selected corporations, associations and colleges, according to the company.

interactive service programs designed to meet the general and specific needs of the user.

The service will feature user questionnaires; electronic suggestion box with return mail response; on-line documentation; charge code accounting; and electronic conference calls.

There is no additional charge to users. The vendor has no initial start-up fee and charges \$8/hour for connect-time, a spokesman said from 4739 Alla Road, Marina Del Rey, Calif. 90291.

Agristar also offers users an electronic mail function called Stargram; a time-sharing farm management analysis and forecasting program; an agricultural encyclopedia; and a library of agricultural

production technology. A product and service electronic "yellow pages" is planned for system integration later this year.

Agristar will be distributed through Radio Shack retail stores by an exclusive agreement with Tandy Corp., ARI said. The cost to an average farmer, excluding hardware, is reportedly about \$100/mo on a daily use basis. ARI is located at 205 W. Highland Ave., Milwaukee, Wis. 53203.

System/38 Users Get RPG/3-Rule

HUNT, Texas — A programming/debugging ruler for users of RPG/3 or data description specifications (DDS) on the IBM System/38 is available from Hexco, Inc.

The stainless steel RPG/3-Rule has scales for underlaying all eight specifications.

The ruler costs \$24, with personalization available for an additional \$6, from the vendor through P.O. Box 199-RO, Hunt, Texas 78024.

LET **TUG** PULL YOU THROUGH



Increase programmer productivity with TUG — the proven test utility generator from Tech Products Inc.

TUG was designed to give you a realistic measure of control over programming projects, eliminating the need to write programs to test programs. The result: projects come in on time and under budget!

TUG pulls for you many ways:

- increases programmer productivity
- faster debugging
- easy-to-use
- free form input
- reduces machine testing
- saves time and money
- IBM DOS and OS compatible

You can depend on TUG to improve your project control.

Try TUG FREE for 30 days. To receive your copy or if you need more information, call or write:



TECH PRODUCTS INC.
7700 Leesburg Pike
Falls Church, VA 22043
Phone: (703) 448-9025

THE INSTITUTE FOR CERTIFICATION OF
COMPUTER PROFESSIONALS ANNOUNCES THE

CDP ANNUAL
EXAMINATION

SCHEDULED FOR MAY 7, 1983

The Annual examination for the Certificate in Data Processing (CDP) will be held on May 7, 1983, at selected test centers throughout the world.

Specific requirements for this year's examination are detailed in the "Certificate in Data Processing Examination Announcement and Study Guide." The study guide and application form for the 1983 examination are available on request from ICCP.

Deadline for Filing Application is March 1, 1983

Please forward the "Certificate in Data Processing Examination Announcement and Study Guide" along with application and test site list.

Name _____

Street Address _____

City _____

State or Province _____

Zip Code _____

MAIL COUPON TO: Institute for Certification of Computer
Professionals Certification and Testing Section
304 East 45th Street
New York, N. Y. 10017

SAVE WITH PROTOCOL CONVERTERS



- Reduce Leased Line Costs
- Reduce Terminal Expenses
- Increase Network Efficiency
- Provide Transparent Dial-In Support

IBM 3276	SNA/SDLC PU2	ASCII
IBM 3767	SNA/SDLC PU1	ASCII
IBM 5251	SDLC SYSTEM 34 & 38	ASCII
IBM 3271	BSC 3277	ASCII
IBM 3271	BSC/SNA 3274	

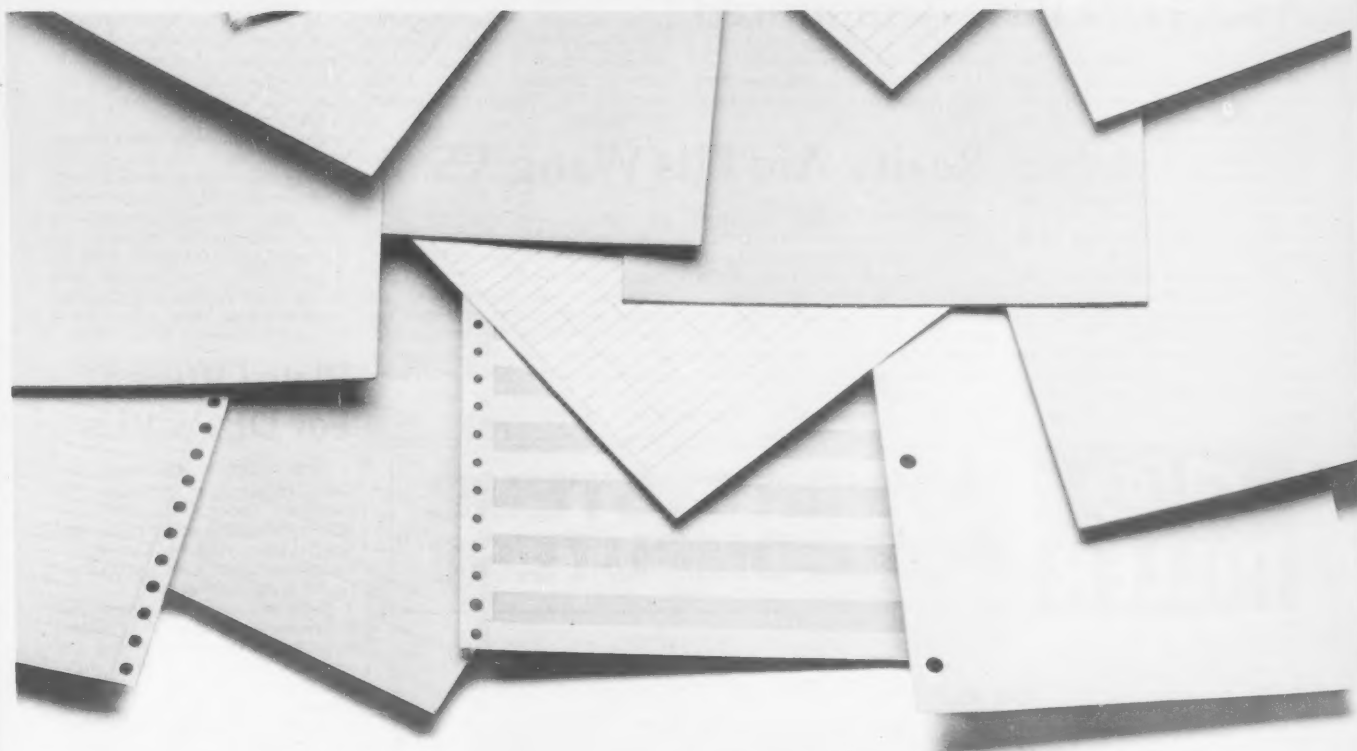
**Newcorp
Products, Inc.**

45 COMMERCE DRIVE • ASTON, PENNSYLVANIA 19014



Member
Computer Dealers
& Leasing Association

800-345-8278
IN PENNSYLVANIA (215) 485-8180



Digital's portable terminal. The only thing plain about it is the paper it prints on.

Introducing the Correspondent. The plain paper portable.

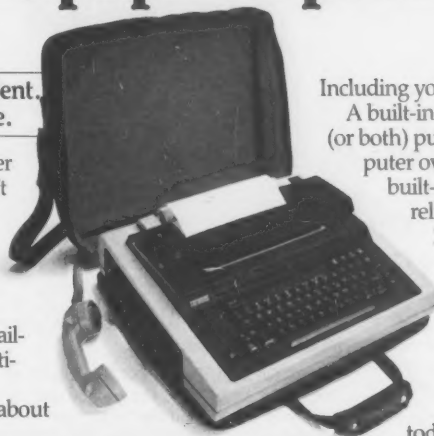
Now there's a portable DECwriter terminal from Digital that doesn't depend on thermal paper to do business.

Virtually any paper will do, so the Correspondent is always ready to go.

Plain paper is inexpensive, available everywhere, usable for multi-part forms, and won't fade.

But there's nothing else plain about the Correspondent.

You can't buy a faster portable. It can translate standard-size computer text and graphics onto ordinary 8 1/2" x 11" paper, all in clear, crisp dot-matrix printing. And do it in any of 10 languages.



Including yours.

A built-in acoustic coupler or modem (or both) puts you in touch with your computer over any telephone line. Another built-in: the Digital reputation for reliability and service, backed by 200 carry-in service centers worldwide.

Is the Correspondent the best portable you can buy? That should be plain.

As plain as the paper it prints on.

See your Digital distributor today or call 1-800-DIGITAL, extension 700. In Canada, call 1-800-267-5250. Or write **Digital Equipment Corporation**, Terminals Product Group, 2 Mt. Royal Avenue, UP1-5, Marlboro, MA 01752.

digital

For Financial Specialists

ARA Data Base Announced

CLEVELAND — Predicasts, Inc. has announced an Annual Reports Abstracts (ARA) data base with applications for marketing, planning and financial specialists.

Available in February through Dialog Information Services, Inc.'s and in April through Bibliographic Retrieval Service, Inc.'s BRS, ARA is said to be accessible through "most terminals," the vendor said.

ARA reportedly will provide abstracts of information in the annual reports of thousands of U.S. and international companies.

ARA will initially contain 27,000 abstracts covering 3,000 companies. Pricing will be based on hourly usage plus a per-record charge, a

spokesman for the vendor said.

The data base is available from 11001 Cedar Ave., Cleveland, Ohio 44106.

Realty Aid Fits Wang VS

RIVER EDGE, N.J. — Cliff Data Systems, Inc. has unveiled a commercial/industrial retail real estate package written in Wang Laboratories, Inc.'s Cobol for the Wang VS line.

Leasetrak-II is said to be fully integrated; to tie together accounting, leasing and operational management departments off the same data base; and to interface with accounts payable, payroll and general ledger

Designer Layout Package Out

HOUSTON — A heating, ventilation and air conditioning duct layout automated drafting package said to increase designer productivity is available from Engineering Graphics Technology.

To use Ductsys, the designer selects a duct fitting symbol from the Ductsys menu and places it at the desired location on the drawing displayed on the computer-aided design (CAD) terminal.

Ductsys reportedly will automatically draw the fitting and the connecting duct from previous fittings. Selection of fittings includes transitions, tees, splits and curved bends for any user-specified angles.

Usable on CAD systems from Intergraph Corp., the package costs \$2,500 from Engineering Graphics Technology at Suite D106, 11231 Richmond, Houston, Texas 77082.

Plato Offered For DEC CPUs

NEW YORK — Operations Research/Management Science Dialogue, Inc. has announced that it is offering a version of its Plato decision support system for Digital Equipment Corp. VAX and Decsystem-20 series processors.

Plato, an integrated language that incorporates analytical routines, three data management packages, a report generator and graphics package, already is available on Prime Computer Corp. and IBM VM/CMS processors, the vendor explained. The language is written in Fortran and can be transferred to other processors, according to a spokesman for the vendor.

The DEC-compatible version of Plato is priced from \$30,000, the vendor said from 35th Floor, 19 Rector St., New York, N.Y. 10006.

'NDS' Allows On-Site Updates

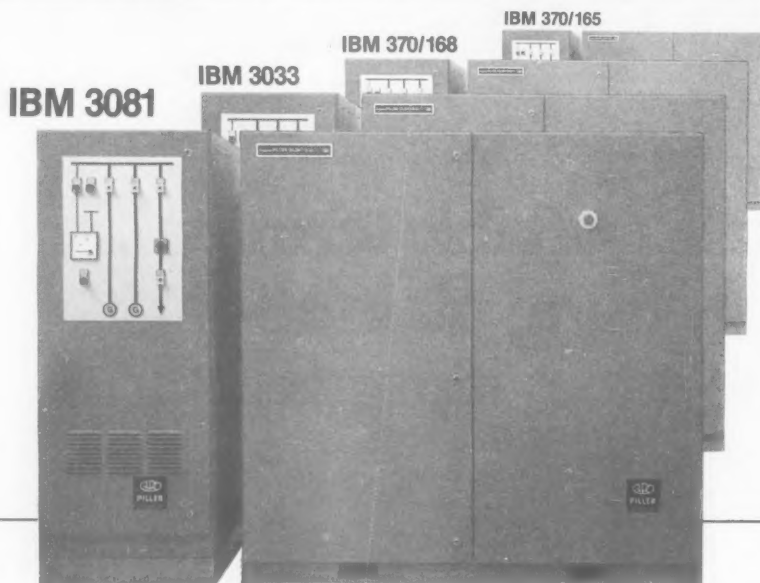
NORCROSS, Ga. — Digital Communications Associates, Inc. has introduced a software package that is said to allow users of the company's System 355 Master Network Processor to create or update network configurations on-site.

The Network Design System (NDS) Processor is implemented as three-code modules that can run as part of the customer's on-line System 355.

The NDS is available for \$4,995, which includes training for up to two people and documentation. More information is available from Digital Communications Associates, Inc., 303 Technology Park, Norcross, Ga. 30092.

PILLER

POWER SYSTEMS FOR COMPUTERS

Then and today...
PILLER IS STILL NO. 1

Announcing the **PILLER 40 KVA** power system for **IBM system 3081***...the only 40 KVA power system that meets IBM specifications—and—incorporates PILLER's exclusive paralleling design.

This permits redundant operation of two or more **PILLER 40 KVA** Frequency Converters to support single or multiple **3081 CPU's**, expandable on a modular basis.

And as usual, the **PILLER 40 KVA** Frequency Converters offer a number of other exclusive advantages not currently available in other power units...including dual input voltage capability (either 208V or 460V input)...and a special startup system which reduces surge demands to half those of other frequency converters.

*Also meets specifications for **AMDAHL System 580**.

All this at a cost that is competitive with the IBM Model 3089 power unit.

Today, as then, PILLER offers more 60 Hz Motor Generator and 415 Hz Frequency Converter models than any other manufacturer, plus a full range of paralleling, power distribution and control equipment required for total power system integration.

No wonder **PILLER** remains the **NO. 1 CHOICE** in power protection for IBM CPU's, with more than 3,000 systems installed coast-to-coast.

Like to know more? Contact Murray Lazar, Director of Marketing. (914) 355-6741.

KW CONTROL SYSTEMS, INC.
South Plank Road, Middletown, New York 10940
Phone (914) 355-6741 TELEX No. 13-7428

CRT CABLES
SAVE UP TO 50%

•Fast Service•Guaranteed Products•

Belden 9207 Twinaxial for
SYS/34-38, 5520, 5260, 5280

Belden 9269 Coax for
303X, 4331, 8100, 370, SYS/3

ALSO - Teflon Air Plenum Cable,
Lightning Protectors, Switch Boxes,
Wall Plates, RS232C Assemblies, all
of Belden's Cable Products Available.

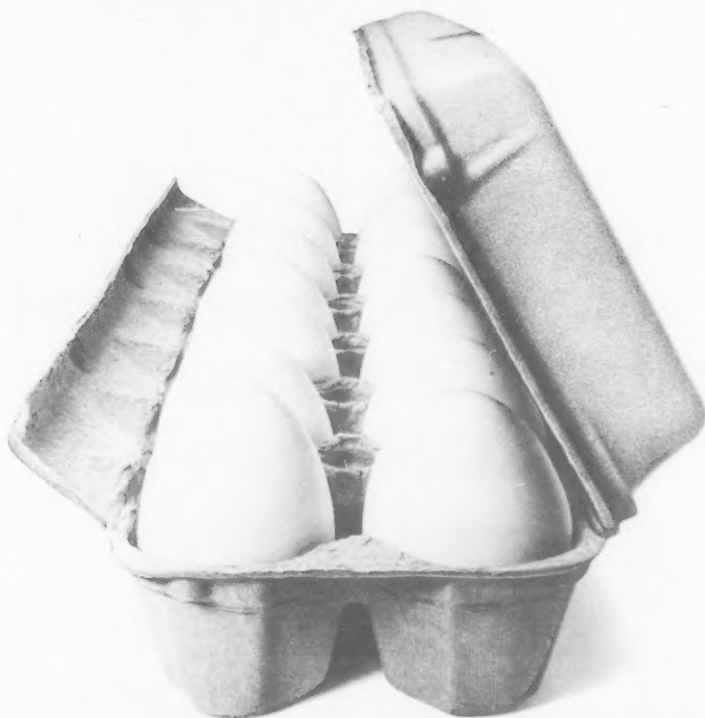
Cord Cable Company

1704 - 3rd Ave. S.E.

Rochester, MN 55901

1-800-533-1576 or 507-282-7252

There's more to Computerworld than meets the eye.



When you subscribe to *Computerworld*, every week brings you an information-packed issue to help you keep pace with the technological developments that affect your decision making, every day. But there's more to a *Computerworld* subscription than meets the eye.

Like those eggs. Are there really only twelve? Look again.

More than you expected, right? And that's exactly what you get when you subscribe to *CW*; more than you expected. Look...

• **New... 3 BUYER'S GUIDES IN 1983**... to help put you in touch with the right people in *Computer Systems, Terminals & Peripherals* and *Software*. Each Guide gives you extensive company and product data, handy referral charts and up-to-date input on product trends and the new technologies—all presented in a manageable, easy-to-use format.

• **New... 2 ISSUES OF "COMPUTERWORLD ON COMMUNICATIONS"**... for business communications managers and others on both the technical and administrative levels. You'll be kept abreast of changing trends in the design, acquisition, operation and optimum use of corporate communications facilities.

• **6 ISSUES OF COMPUTERWORLD OA**... Look for in-depth, focused coverage of the important trends and information in the exploding Office Automation field: Organizational Strategies and Planning; Workstations; Software; Personal Computers; Micros & Desktops; User Output Technologies; and Communications.

But don't plan on reading someone else's pass-along copies of these important additional publications. Chances are, they'll be kept right where they were delivered—for future reference.

Best bet: get your own subscription.

That way, you won't have to wait for all the critical, authoritative news *Computerworld* delivers, each week.

And you'll get all the bonus publications—hot off the press—for your own personal use and benefit.

And soon, you may even find yourself rising in the company pecking order.

Subscribe now!

Just fill in and mail the Subscription Form below, or return the Form bound into this publication. Or, to get *Computerworld* coming your way even faster, call toll-free: 1-800-343-5730 (in Mass., call collect: 617-879-0700) and charge your subscription to your major credit card.

Subscription Form

YES, please send me *Computerworld* for one year. I understand that my satisfaction is guaranteed and that I may cancel at any time and request a refund on the unused portion of my subscription.

First Initial	Middle Initial	Surname																						
Your Title																								
Company Name																								
Address																								
City															State					Zip Code				

Address shown is: ☐ Business ☐ Home

☐ Check here if you do not wish to receive promotional mail.

☐ Check here if you're interested in receiving information on *Computerworld's* Index.

Rates

United States	\$ 44	Europe	\$165
Canada, Central & South America	\$110	All Other Countries	\$245
		(Air Mail Service)	

☐ Check Enclosed

☐ Am Ex ☐ BA/VISA ☐ MC (MC Only—List four digits above your name)

--	--	--	--	--	--	--	--	--	--	--	--	--	--

If charge, we must have cardholder's signature: _____ Expiration Date: _____

If you are using a credit card, you can enter your order by calling TOLL-FREE: 1-800-343-5730 (in Mass., call collect: 617-879-0700).

PLEASE CIRCLE 1 NUMBER IN EACH CATEGORY—BUSINESS/INDUSTRY

- 10. Manufacturer of Computer or DP Hardware/Peripherals
- 20. Manufacturer (other)
- 30. DP Service Bureau/Software/Planning/Consulting
- 40. Public Utility/Communication Systems/Transportation
- 50. Wholesale/Retail Trade
- 60. Finance/Insurance/Real Estate
- 70. Mining/Construction/Petroleum/Refining
- 75. Business Service (except DP)
- 80. Education/Medicine/Law
- 85. Government—Federal/State/Local
- 90. Printing/Publishing/Other Communication Service
- 95. Other

TITLE/OCCUPATION/FUNCTION

- 11. President/Owner/Partner/General Manager
- 12. VP/Assistant VP
- 13. Treasurer/Controller/Finance Officer
- 21. Director/Manager of Operation/Planning/Administrative Service
- 22. Director/Manager/Supervisor DP/MIS Svcs.
- 23. Systems Manager/Systems Analyst
- 31. Manager/Supervisor Programmer
- 32. Programmer/Methods Analyst
- 41. Application Engineer
- 42. Other Engineering
- 51. Mfg. Sales Representative
- 52. Other Sales/Marketing
- 60. Consultant
- 70. Lawyer/Accountant
- 80. Librarian/Educator/Student
- 90. Other

Just fill in above and mail to:



COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
275 Cordis Road, Box 887, Framingham, MA 01701-0887, 879-0700
Or use the Subscription Order Form and envelope bound into this publication.

FLOW Calc™

the VAX spreadsheet calculator

\$3500

to try it yourself, call:

800-235-6788 (in California, call 805 964-7724 collect)

The Software Workshop™

GENERAL RESEARCH CORPORATION • A Flow General Company
5383 Hollister Avenue • Santa Barbara, California 93111

Information Unlimited Software, Inc. announced a package offering a programmable spreadsheet capacity for IBM Personal Computer users. Called **Easy Planner**, the system reportedly allows the user to specify the steps he needs to take in performing worksheet calculations, in addition to performing other standard spreadsheet functions. The product is available for \$250, according to the vendor at 2401 Marinship Way, Sausalito, Calif. 94965.

Bytek, Inc. has announced a

menu processor for microcomputers that support RM/Cobol.

Called **Menu Master**, the menu processor is said to provide multilevel menus with built-in security. Menus require no compilation, a spokesman said. Other features include interactive menu editing, ability to create a general network in which other menus and user-written processes can be called from a menu item, ability to traverse the menu network in any direction and automatic generation of documentation on the menu networks. Menu Master is

priced at \$245.

At the same time, the company announced that Computhink, Inc. will distribute Bytek's Cogen RM/Cobol generator on Computhink's family of Motorola, Inc. 68000-based Hawk microcomputers.

Bytek is located at 1714 Solano Ave., Berkeley, Calif. 94707.

A Forth language compiler for the IBM Personal Computer has been introduced here by Armadillo International Software. **PCForth** is based on the Fig model of Forth and comes with a 75-page manual and diskette. It costs \$59.95 and the vendor can be reached through P.O. Box 7661, Austin, Texas 78712.

Science Research Associates, Inc. has announced a new software package that introduces the user to Basic. **Discovering Basic** reportedly teaches fundamental programming concepts via a series of exercises and comes with a diskette, a workbook and an instructor's guide. It runs on Apple Computer, Inc.'s Apple II microcomputers and costs \$210, the vendor said from 155 N. Wacker Drive, Chicago, Ill. 60606.

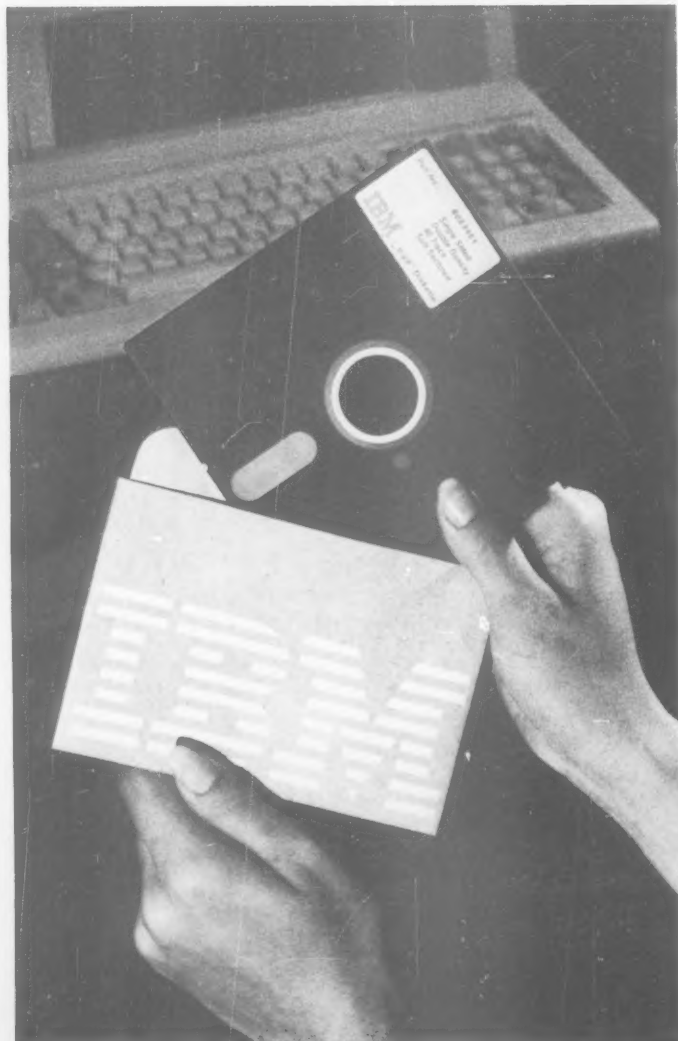
Money Decisions Volume II for the IBM Personal Computer has been announced by Eagle Software Publishing, Inc. This product is a collection of 36 business and financial problem-solving routines, with integrated graphics support enabling the user to perform business calculations and financial analysis with ease, according to the vendor. It costs \$229, the vendor said from 110 W. Lancaster Ave., Wayne, Pa. 19087.

An operating system called **CP/M Plus** for business and commercial applications has been developed by Digital Research, Inc. This system is reportedly fully compatible with all other 8-bit Digital Research operating systems. It is designed to enhance performance of 8-bit microcomputers with one or more banks of 64K bytes of random access memory. This system also features error trapping and recovery, the vendor said. Prices start at \$350. The vendor can be reached through P.O. Box 579, 160 Central Ave., Pacific Grove, Calif. 93950.

Superfile reportedly solves text data organization problems by letting users of IBM Personal Computers cross-reference and retrieve information with up to 250 personal keywords. This product was formerly only available to Digital Research, Inc. CP/M- and MP/M-based systems with Zilog, Inc. Z-80 central processing units. It costs \$195 from FYI, Inc. through P.O. Box 10998, No. 615, Austin, Texas 78766.

A software development tool consisting of a **Host Operating System** and the **Snapple Hand Held Computer** simulator for Apple Computer, Inc. Apple II and Apple II Plus users has been unveiled here by Panasonic Co. In addition to facilitating software development, this product reportedly allows debugging and testing of Apple II systems. This product costs \$1580 through Panasonic at One Panasonic Way, Secaucus, N.J. 07094.

Sleeves of Tyvek® protect your data investment better than paper. Here's why:



1. TYVEK® spunbonded olefin has more than twice the strength of good quality paper.
2. TYVEK does not lint.
3. TYVEK is smooth and nonabrasive.
4. TYVEK is chemically clean...has a neutral pH.
5. TYVEK reduces static problems.
6. TYVEK is unaffected by water.

With TYVEK, you don't have to compromise on any important sleeve criteria. You get it all. That's why TYVEK is still the best way to protect your diskettes.

For more information, write: DuPont Company, Room 39706, Wilmington, DE 19898.

DuPont registered trademark.
DuPont makes TYVEK, not sleeves.



TI Reduces Prices On Silent 700 Terminal Line

DALLAS — Texas Instruments, Inc. has announced price reductions of 10% to 24% on selected models of its Silent 700 data terminal product line.

The reductions affect the list prices of the 30 char./sec Models 743 Receive Only, 743 Keyboard Send-Receive (KSR) and 745 Portable Data Terminal. The price reductions affect unshipped backlog, new orders and existing purchase agreements, a company spokesman said.

The price changes are as follows: 743 Receive Only, from \$995 to \$895 (10%); 743 KSR, from \$1,195 to \$995 (17%); 743 KSR with compressed print option, from \$1,490 to \$1,250 (16%); 745 Portable Data Terminal, from \$1,695 to \$1,295 (24%); and 745 Portable Data Terminal with compressed print option, from \$1,990 to \$1,550 (22%).

TI also announced a 14% price reduction on its 136-col. compressed print option for the Models 743 and 745 when factory installed and 18% when field installed. The field-installed price for the option is now \$350, down from \$425. The factory-installed price is \$255.

Further information is available from TI's Data Systems Group, P.O. Box 402430, H-637, Dallas, Texas 75234.

For Micro-to-CPU Link

Release 2 of 'Context MBA' Out

TORRANCE, Calif. — Context Management Systems has introduced Release 2 of the Context MBA software package for micro to mainframe communications. The current version of the package contains a telecommunications and conversion feature.

The package allows communication between an IBM Personal Computer and any other host, including mainframes, a vendor spokesman claimed. Models, reports and other data produced on the MBA can be sent electronically to a central computer in a mail system or to another MBA-equipped personal computer.

Context MBA is said to integrate modeling, graphics, word processing, data base, forms and telecommunications in one program. A version without telecommunications capabilities is available for the Hewlett-Packard Co. 9816 microcomputer-based desktop.

System Access Security Offered

PALO ALTO, Calif. — Digital Pathways introduced a computer access security system that reportedly allows traditional computer logon procedures and functions as an authorization point through which users must receive clearance prior to accessing the computer.

Defender provides a solution to the problem of access security over dial-up data lines. The user calls the system on any standard Touch-Tone telephone.

A digitized voice response asks the user to enter an identification code number using the telephone's numeric key pad, according to a vendor spokesman.

After receiving the identification number, Defender reportedly checks its validity and instructs the caller either to hang up or to reenter the identification number. If after three attempts or 30 seconds the

Choosing Local-Area Net Focus of Users' Seminar

By Phil Hirsch

CW Washington Bureau

ORLANDO, Fla. — The factors that users should consider when choosing a local-area network were discussed at length during a four-day seminar here last week on "Local-Area Networking and Beyond," sponsored by the International Communications Association, a user group made up of most of the nation's largest companies.

According to one conference speaker, consultant Harvey Freeman, the local-area network evaluation process should begin with the application, which must be examined in terms of several variables.

For example, Freeman said, the user must decide how important it is to prevent the application from being interrupted by a network failure. Ring-type local-area networks are less vulnerable to total breakdown than bus- or private automatic branch exchange-based systems, he noted, although some suppliers of the latter architectures have found ways to minimize this problem.

Private branch exchange-based nets can employ multiple, distributed switch modules, and at least one vendor of broadband-type local-area networks — Amdax Corp. — guards against failure of the head end by providing a standby head end.

Traffic mix is another selection factor,

Freeman said. Because they provide multiple channels, broadband local-area networks can carry voice, video and data concurrently; baseband systems are restricted to data.

However, baseband systems are cheaper, according to Charlie Bass, vice-president and co-founder of Ungerman-Bass, Inc. A 1M byte/sec baseband transceiver costs approximately \$100 vs. about \$500 for a 1M byte/sec broadband modem, he said.

Moreover, the baseband system can transmit up to 50M bit/sec vs. a maximum channel rate of 10M bit/sec for broadband, added Bass, who also spoke at the conference.

But such figures can be misleading, Freeman said, because they represent only the node-to-node transmission speed. Because of delays between those points and the terminal — delays caused by the need to process incoming bits before they can be delivered to the receiving terminal and outgoing bits before they can be transmitted — the end-to-end throughput on a local-area network, regardless of type, is generally only about 10% of the node-to-node speed and is dependent for the most part on other factors, Freeman said.

There are several ways to maximize throughput on a local-area network, but the cost-effectiveness of these methods is controlled largely by the traffic pattern, both speakers pointed out.

One way is to use Carrier Sense Multiple Access/Collision Detection to allocate access to the channel. Simpler, cheaper schemes may be adequate if there is not much chance that one terminal will try to transmit at the same time as another.

According to the speakers, additional variables to consider include:

(Continued on Page 52)

Aztek's 'SIM3278' Links Micros to IBM Mainframes

OTTAWA — Aztek Computing, Inc. has introduced a software package said to link microcomputers and asynchronous terminals to IBM mainframe computers and have them appear as local IBM 3278 terminals.

Named SIM3278, the protocol conversion software provides the full-screen functions of a 3278 while using an Ascii

terminal without any hardware or operating system modifications or additions.

Existing full-screen software can be used without modification by both microcomputer and dumb terminals. The package translates 3270 data streams into Ascii control sequences valid for the specific type of CRT terminal and vice versa.

The package is available for a one-time purchase fee of \$5,000 from Aztek Computing, 969 Bronson Ave., Ottawa, Ontario, Canada K1S 4G8.

CRC Modem Works Via House Wiring

SEATTLE — Communications Research Corp. (CRC) has introduced a 100-line carrier modem said to utilize existing house, factory or office power wiring to connect terminals and printers to a computer.

The LCM-100 transmits at 9,600 bit/sec and consists of two units. One unit works with the computers, while the other handles printers and other devices, according to the vendor.

The LCM-100 is available for \$365/set from the firm at 1720 130th Ave. N.E., Bellevue, Wash. 98005.

Efficient Local-Area Nets to Grow: Consultant

ORLANDO, Fla. — The use of local-area networks will increase significantly during the '80s because they represent the most efficient way of interconnecting a growing population of data terminals, a speaker at last week's International Communications Association conference maintained.

According to consultant Harvey Freeman, the growth of local-area networks is being spurred by a growing awareness of the data termi-

nal's cost-avoidance potential. The salaries and fringe benefits paid to middle-level executives represent a major part of office costs; data terminals usually enable them to do significantly more work in less time, he noted.

Also spurring the use of local-area networks is rising communication costs, Freeman said, observing that local-area networks often save money compared with carrier-provided services. He expects rates for local-exchange

services to increase dramatically after AT&T divests the Bell operating companies, making local-area networks even more attractive.

Freeman predicted that:

- Future local-area networks will employ hierarchical architectures, enabling ring-, bus- and star-type pri-

vate automatic branch exchange networks to be interconnected.

- Local-area network costs — which have been coming down — will decrease further because of very large-scale integration technology.
- The popularity of fiber-optic cable-based local-area net-

works, which now represent a minority of the installations, will rise dramatically within the next few years, fueled by decreasing prices and improved installation techniques. By 1989, most local-area networks will be using fiber-optic transmission media, Freeman forecast.

PBX Costing Called 'Different'

ORLANDO, Fla. — Determining the cost of a private branch exchange-based (PBX) local-area network involves factors "quite different" from those associated with dedicated data networks, according to William LaFlamme, a speaker at last week's International Communications Association conference here.

"The basic cost of the PBX will be justified by the telephone requirements of the organization," explained LaFlamme, director of product marketing for Lexar Corp., a maker of voice/data PBX equipment. "Potential savings in [this] area alone may well pay for the switch."

Designing a system that is considerably larger than the one that is required for current needs is "a normal procedure," LaFlamme said. In addition, adding data communications capability to a PBX network requires a data interface at the switch port and may call for upgrading the switch central equipment. However, the PBX-based system "has inherent in its architecture the ability to reduce some of the long-distance charges created by off-site communications," he noted.

"The ability to allocate or

rebill communications costs can also result in substantial

savings in many cases," he said.

Your key to success VSAM training at Chubb

Learn to use Access Method Services to create, load, delete, and list data sets and the COBOL coding required to process VSAM data sets.

Come join the group of satisfied clients at Chubb Advanced Training Center. Our VSAM in COBOL class is skill oriented. Emphasis is placed on the practical knowledge needed to be immediately productive. Informative lectures, comprehensive manuals and practical workshop assignments guarantee a solid understanding.

Classes are presented publicly in New Jersey, in-house and to regional training groups in a consortium format.

February 22-24.....May 23-25

For more information on the courses offered by Chubb Advanced Training Center send for your free catalog or call (201) 467-7680.



CHUBB ADVANCED TRAINING CENTER
480 Morris Avenue
Summit, NJ 07901

PDP-11® & VAX® users...

ComDesign's **TC-3** Concentrates
Multiple
Over One **1** Terminals
... Without a Phone Line
... Without a **DZ11!**

- **COST SAVINGS TO 90%**
Totally eliminates DZ11s, extra modems and phone lines
- **STATISTICAL MULTIPLEXING**
Up to eight 9600 bps terminals over 1 phone line
- **ERROR CORRECTION**
Phone line errors eliminated automatically
- **PROVEN RELIABILITY**
Over 3 years MTBF
- **FAST ECHO RESPONSE**
- **CONCENTRATION**
Multiple terminals—one line
- **COMPLETELY TRANSPARENT**
No software changes needed
- **BUILT-IN SYSTEM MONITORS**
Real-time data and signal displays, statistics and error counters
- **POWERFUL DIAGNOSTIC PANEL**
Modem loop-back, unit self-tests, and terminal diagnostics

**Only \$240/mo. for a TC-3 ... Connect
8 Terminals on 1 Phone Line, Without a DZ11.**

For further information and the sales office for your area call toll-free (800) 235-6935 or in California (805) 964-9852.

ComDesign

ComDesign, Inc.
751 South Kellogg Avenue
Goleta, California 93117

Registered Trademarks of DEC.

Local Net Discussed

(Continued from Page 51)

- The maximum number of terminals that have to be served at any station on the network. Some local-area networks require a minimum distance between connection points ("taps"), which could limit the number of devices that can be attached within a single office.

- Terminal protocols. Since each local-area network vendor does not support all terminal protocols, the user must determine which ones he will need during the life of his network.

- Interfaces to other networks. The user has to determine the external networks with which he will need to interface since no local-area network vendor currently provides universal interconnection.

VAX SOFTWARE!

PACS™ with EZLOG™ is today's standard in:

**Resource Accounting
Performance Monitoring
Internal/External Billing
Project-Based Accounting**



PACS has been accepted into Digital's EAS Library.



Signal Technology, Inc.

5951 Encina Rd. Goleta,
California 93117 (805) 683-3771
Outside California Call Toll Free
(800) 235-5787

VAX is a registered trademark of Digital Equipment Corporation



TP DATA STREAM COMPRESSION

CTOP®, the CICS transmission optimizer, instantly improves CRT and printer response while extending capacity to your entire CICS network.

It also:

- Reduces line busy and front-end loads
- Gives new life to slower circuits
- Online statistics available to measure compression
- SCS printers, color and graphics terminal are supported
- No modification to anything

Site license under \$3,000... 'no obligation' trial to qualified prospects.

Contact:

H&W Computer Systems P.O. Box 4173, Boise, Idaho 83704
Phone 208 377-0336

Fiber-Optic Links Created For Pronet Net Systems

WALTHAM, Mass. — Fiber-optic links, usable in place of wire on any Pronet network system, are available from Proteon Associates.

The links are available in lengths up to 2.5 km as standard catalog

Sprinter Unit Allows Editing Before Printing

CARROLLTON, Texas — Computer Language Research, Inc. has introduced a previewing terminal designed for use with the company's Sprinter software, a text and form composition system for the production of insurance policies, technical manuals, documentation, proposals and directories.

The Sprinter Previewing Terminal, combined with the Xerox Corp. 9700/8700 Electronic Printing System and the software, offers an alternative to traditional typesetting, a vendor spokesman said.

The terminal is designed for proofing copy before printing and the CRT screen displays a duplication of the output. This allows composition and editing of documents before the printer is used.

The terminal is available for \$12,000 from Computer Language Research, Inc., 2395 Midway Road, Carrollton, Texas 75006.

Phalo Enhances Fiber-Optic Line

CHATSWORTH, Calif. — Phalo/O.S.D. Corp. has announced an addition to its fiber-optic line of products, a high-speed asynchronous/synchronous time division multiplexer. It was designed for computer-to-terminal link, secured communications link and links between process control equipment.

The OMX-5600 provides eight full-duplex channels, will support data rates up to 57.6K bit/sec on each input channel and features remote and local loopback testing paths for data on a channel-by-channel basis. It is available in a stand-alone/rack-mountable configuration.

The base price for eight channels is \$6,000. More information is available from Phalo/O.S.D., 9240 Deering Ave., Chatsworth, Calif. 91311.

Brochure Describes Selection of Cables

LINCOLN, R.I. — International Data Sciences, Inc. is offering a six-page brochure describing a selection of data communications cables.

The brochure includes standard and long-distance EIA RS-232C cable, Null Modem cable, EIA RS-449 cable, V.35 cable, 25-Wire ribbon cable and four types of coaxial cable. Cable descriptions and detailed electrical specifications are included.

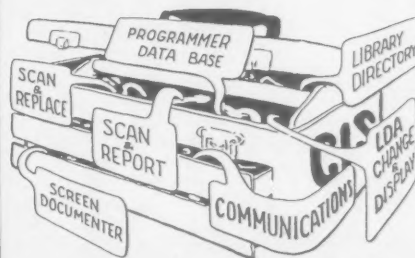
The "1982 Data Interface Cable" brochure is available at no cost from the vendor at 7 Wellington Road, Lincoln, R.I. 02865.

items and up to 10 km (node-to-node distance) for special units. Advantages include no degradation of either network performance or reliability due to the linkage and security provided by fiber-optic links, which are very difficult to tap. Proteon fiber-optic links are suitable for connecting distant clusters of machines, serving as links between Pronet wire centers, according to a vendor spokesman.

Priced between \$1,350 and \$1,600 depending on the size and number of units purchased, the links are available from Proteon Associates at 24 Crescent St., Waltham, Mass. 02154.

PROGRAMMING PRODUCTIVITY

THE RIGHT TOOLS
MAKE THE JOB GO FASTER



WE CAN CUT YOUR IBM S/34 SOFTWARE DEVELOPMENT TIME UP TO 80 PERCENT AND PREPARE COMPLETE AND CONCISE DOCUMENTATION TO BOOT!!

SATISFACTION GUARANTEED OR YOU GET YOUR MONEY BACK.

COMPUTER INFORMATION SYSTEMS, INC.
P.O. BOX 18000, SUITE 84 LAS VEGAS, NV 89114
(702) 736-4215

NATURAL™ Online Applications Development System



You direct, it performs.

Orchestrating all the details of a new online application can be either a very trying task, or a richly rewarding one.

If you play it the traditional way, it's *adagio* at best, and you spend most of your time smoothing out sour notes from your programmers.

On the other hand, if you use NATURAL you can pick up the beat considerably and get rave reviews from your entire organization.

NATURAL is Software AG's comprehensive online, interactive programmer productivity system for IBM and plug-compatible environments. NATURAL has everything you'd ask for in the instrument of your choice: powerful programming language, screen map generator, report generator, editor, librarian, ad hoc inquiry facility, and more.

The result is a system that can speed up applications development time by as much as 90%, while working in complete harmony with your existing operating system. And if your environment changes, NATURAL will still stay right with you—as will ADABAS™, the adaptable data base management system that stands behind NATURAL.

To audition ADABAS and NATURAL, send in the coupon today. It could mark a breakthrough in the way you conduct your business.

Software AG of North America, Inc.
11800 Sunrise Valley Drive
Reston, VA 22091
(703) 860-5050

- ☐ Please send me information about NATURAL.
☐ I'd also like to hear about ADABAS.
☐ Please send me information on your free DBMS Seminars.

Name _____
Title _____
Company _____
Address _____
City _____ State _____
Zip Code _____ Telephone () _____
CPU _____ Operating System _____

SOFTWARE AG
OF NORTH AMERICA, INC.

CW 0124

SAS... Power and Flex to Meet All You

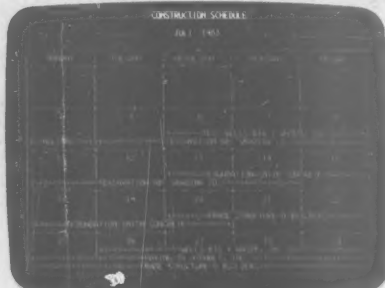
If you're looking for one software system to meet all your needs, join the over 6000 businesses, government agencies and educational sites where SAS products are used everyday.



SAS/GRAPH

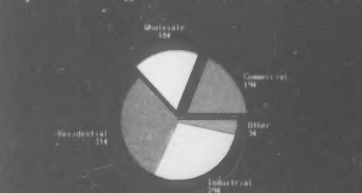
SAS products provide an integrated system for:

- data management, statistical analysis and report writing—SAS®
- color graphics—SAS/GRAPH™
- econometric forecasting, modeling and row-and-column financial reporting—SAS/ETS™
- full screen data entry, editing, letter writing and spreadsheet financial reporting—SAS/FSP™
- interface to IMS/VS or CICS DL/I data bases—SAS/IMS-DL/I™
- operations research tools for business planning and scheduling—SAS/OR™



SAS/OR

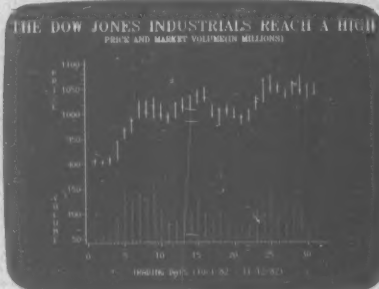
Operating Revenue Dollar



SOURCE: Carolina Power & Light 1981 Annual Report, p. 8

SAS/GRAPH

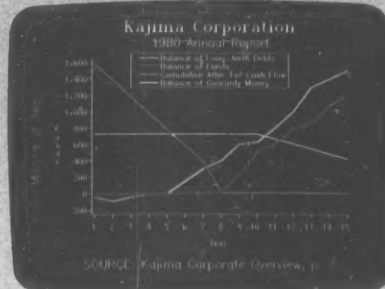
With the SAS System you get the power to handle all your needs quickly and efficiently. Plus you get a flexible system that can grow as your needs grow and change.



SAS/GRAPH

You get a twofold advantage with the SAS System. A library of ready-to-use procedures gives you the power to analyze data without formal training. SAS even provides an on-line help facility. Or you can create your own help program. With a few English-like commands, you can use SAS for data analysis, market research, capacity planning, financial reports, summary statistics, charts, plots, personnel reports and many other jobs.

In addition to these routine tasks, the SAS System handles your complicated programming needs. Extensive data management and retrieval tools, combined with a sophisticated macro facility, allow your decision support staff to create and store complex SAS jobs. You can invoke these programs with one command, giving you easy access to the data today that will help you make important business decisions for tomorrow.



SAS/GRAPH

In short, the SAS System gives you the analytical tools for a complete Decision Support System—integrating modeling, statistical manipulation, graphics and multiple data sources.



SAS/ETS

Available
for
IBM and VAX

ibility r Needs



SAS/GRAPH

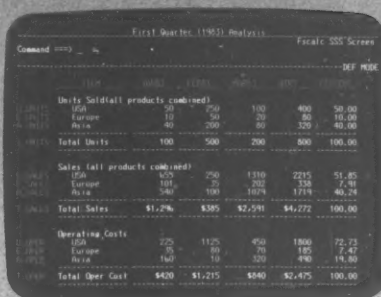
When you lease the SAS System, you don't get a static product. You get a system that grows and changes as your needs grow and change. Originally supported only on IBM 370/30xx/43xx under OS and TSO, SAS products currently run under OS, DOS/VSE and SSX in batch, and interactively under TSO, VM/CMS and ICCF.



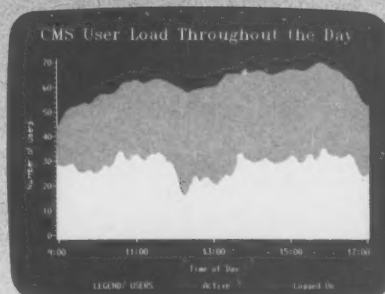
SAS

What's more, the SAS System now runs on Digital Equipment Corporation's VAX™ 11/7xx series.

You get the same benefits of the SAS System on minis as on mainframes. To see for yourself, take advantage of our free trial.



SAS/SPS



SAS/GRAPH

But that's not all. Our continuing development efforts are backed by a complete library of user documentation, a comprehensive training curriculum, a full-time technical support staff and an international users group.

In fact, users have ranked SAS in Datapro Research Corp.'s Top Rated Group for the past seven years. In the latest survey, SAS was one of the only two software packages to receive the honor.

The best in software and service. At a price you can afford.

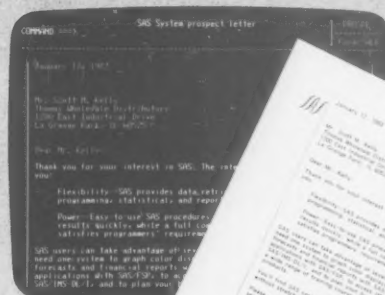
Call today for SAS—power and flexibility to meet all your needs. SAS Institute Inc., SAS Circle, Box 8000, Cary, NC 27511 USA. Telephone (919) 467-8000. Telex 802505.

SAS Institute GmbH, Rohrbacher Strasse 22, D-6900 Heidelberg 1, West Germany. Telephone 06221-29014. Telex 461581.

SAS Software Limited, The Centre, 68 High Street, Weybridge, Surrey KT13 8BL, UK. Telephone 0932-55855. Telex 946138.

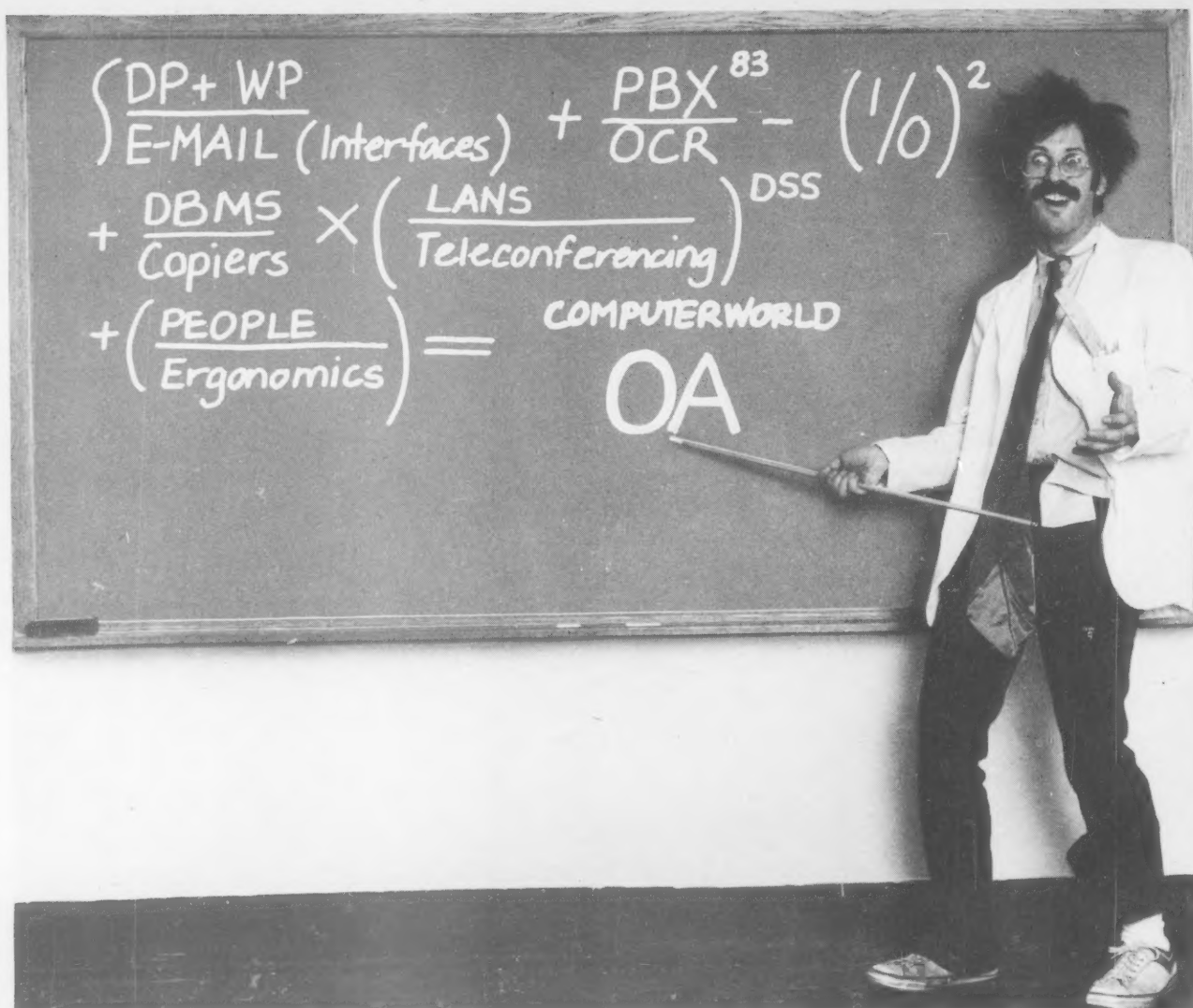
SAS Institute (NZ) Ltd., Level 9, Greenock House, 39 The Terrace, PO Box 10-109, Wellington, New Zealand. Telephone (04) 727-595. Telex NZ 31525.

SAS Software Pty. Ltd., Level 60, MLC Center, 19-29 Martin Place, GPO Box 4345, Sydney, NSW 2001, Australia. Telephone (02) 235-2199. Telex AA 71499.



SAS/SPS





Discover *Computerworld OA* before you plan your OA strategy.

The process of planning and implementing office automation can be a frustrating experience for anyone. The first step is always the hardest, but you *can* make it easier. Make your first step *Computerworld OA*.

The next issue of *Computerworld OA* will focus on "Organizational Strategies and Planning" taking an in-depth look at specific planning strategies, organizational impacts, potential restructuring, setting and achieving objectives, selecting the right vendors and much more. We'll provide information on ergonomics, talk about overcoming the resistance to change and give you implementation guidelines.

In *Computerworld OA*'s six issues for 1983, we'll take you step-by-step through the process of planning and implementing your office automation. Each issue will focus on a key aspect of OA and keep you current on state-of-the-art technologies and just-developing trends.

The issue date for the next *Computerworld OA*, "Organizational Strategies and Planning" is February 23rd.

For information on advertising, call Don Byrnes, National Accounts Manager at (312) 827-4433 or contact your local *Computerworld* representative.

COMPUTERWORLD
OA
OFFICE AUTOMATION

Computerworld OA. We're writing the book on office automation.

SALES OFFICES:

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Kathy Doyle, Diane Sukey, (617) 879-0700
 CHICAGO/Newt Barrett, Chris Lee, Art Kossack, Marguerite Winkler, (312) 827-4433
 NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Fred LoSapio, (201) 967-1350
 SAN FRANCISCO/Bill Healey, Barry Milione, Ruth Gordon, Eileen Dunn, (415) 421-7330
 LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, (714) 556-6480

IBM Micro Gets Tool For Modem

NORCROSS, Ga. — Hayes Microcomputer Products, Inc. has announced communications software designed for IBM Personal Computers using a Hayes Smartmodem Model 300 or 1200.

Smartcom II manages data transfer over the telephone lines and brings the microcomputer, disk drives and printer into the communications. It extends remote computing to a range of users and is built around a menu of program options. A Help feature is also offered, as is display on demand by the user, the vendor claimed.

The program requires 96K bytes of random-access memory, an asynchronous communications card and the operating system DOS 1.10 or 1.00. The software is available for \$119. More information is available from Hayes at 5923 Peachtree Industrial Blvd., Norcross, Ga. 30092.

ATM Model Gauges Costs

ROLLING MEADOWS, Ill. — Bank Administration Institute (BAI) has announced an automatic teller machine (ATM) costing model designed to assist banks in determining the cost of an ATM transaction.

The ATM/5 methodology reportedly can be used by all financial institutions regardless of asset size or program scope. A book entitled *ATM Cost Model* includes both fully weighted cost and incremental cost models.

In addition, specific components of the model are discussed, including operating expenses, marketing, income and data processing. Work sheets are provided to assist banks in calculating their own costs.

ATM Cost Model is priced at \$40 for BAI members and \$60 for nonmembers. Further information is available from the Order Department, Bank Administration Institute, 60 Gould Center, Rolling Meadows, Ill. 60008.



'You Do Have an Edge on the Computer, Pedgley, You Can Still React to Insults.'

Why Drag Your Dinosaur Into The Future?

See
REAL TIME DEMO
At Software Expo
West Booth
610

Still using archaic financial software in today's economy? Can you afford to base critical management decisions on untimely data produced by obsolete batch systems?

Think about it: A \$2,400 IBM Personal Computer gives you personalized and instant results, while your \$20 million IBM data center may take months or years to meet new or changing requirements.

Walker's Integrated, Interactive General Ledger (II/GL) gives you today's information for today's decisions. It combines real time, data base financial software with a unique capability that personalizes your system to your precise needs. And II/GL is fully integrated with Walker's family of products, including Accounts Payable, Accounts Receivable and Credit, Materials Management, and Purchase Order.

Check these differences:

II/GL FOR TODAY'S RESULTS

- Interactive posting immediately screens data at the source—accuracy and timeliness.
- Closing Management Facility is the accountant's right hand drawer, in real time.
- Inquiry Generation System displays up-to-the second information.
- Friendly, interactive report writer instantly satisfies all information requirements.
- Fast Builder defines new systems in a day, modifies existing systems in seconds.
- Reality DSS integrates budgeting, forecasting, planning, and modeling with G.L.

Free Financial Seminars. For More Information, Call Barbara Bond at 415-495-8811.

THE DINOSAUR APPROACH

- Online data entry turns accountants into keypunchers waiting for results.
- "Trial and error" trial balancing lengthens the wait for untimely data.
- Online query highlights stale information.
- "Report Writers" are really Cobol programs with options.
- Specifying system and account data takes months.
- General Ledger is separate from the decision support system.

WALKER

WALKER INTERACTIVE PRODUCTS, 100 MISSION STREET, SAN FRANCISCO, CALIFORNIA 94105 415-495-8811

FINANCIAL SOFTWARE SEMINARS

CW 1

EAST

PHILADELPHIA
March 23
WASHINGTON, D.C.
April 13
NEW YORK
April 20
TORONTO
May 11
ATLANTA
May 18
BOSTON
May 25

CENTRAL

DALLAS
March 24
DETROIT
March 30
CHICAGO
April 14
CLEVELAND
April 27
ST. LOUIS
April 28
MINNEAPOLIS
May 19

WEST

SAN FRANCISCO
March 31
DENVER
April 21
LOS ANGELES
May 12
SEATTLE
May 26

Walker products operate in most commonly used environments including:
• IBM 370/303X, 4300 • Prime • VSAM, IMS/DB, DL/I, ADABAS, IDMS • IMS/DC, CICS, Shadow II, CMS, COM-PLATE

WALKER INTERACTIVE PRODUCTS
100 Mission Street, San Francisco, CA 94105 415-495-8811

REGISTRATION

Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____
Phone (____) _____
Computer _____ Op Sys _____
TP Monitor _____ DBMS _____

I cannot attend your seminar but would like more information on:

- ☐ Accounts Payable ☐ Materials Management
☐ Accounts Receivable and Credit ☐ Purchase Order
☐ General Ledger

WHEN WAS THE LAST TIME YOU SAVED \$25,000 ON A PHONE CALL?

Save \$25,800! RP07 Fixed Disk (516 MB) and TU78 Magnetic Tape Combination, now only \$60,200.

Save \$22,800! RP07 Fixed Disk and RP07 Fixed Disk (1032 MB total) Combination, now only \$53,200.

Save \$21,600! RP07 Fixed Disk (516 MB) and RM05 Removable Disk (256 MB) Combination, now only \$50,400.

Save \$21,240! RM05 Removable Disk (256 MB) and TU77 Magnetic Tape Combination, now only \$49,560.

Save \$3,900! RK07 Removable Disk (28 MB), now only \$9,100.

Master subsystems also available at 30% discount.

To order call 800-343-4040, extension 250, any weekday between 8:00AM and 8:00PM EST.*

All products listed covered by standard warranty. Existing Digital discounts apply to sale price. Sale items must be separate line items on any order. Purchase order must be received by March 31, 1983. Digital reserves the right to limit quantities and schedule deliveries. Prices apply to the U.S. only.

ORDER NOW AT 30% SAVINGS:

800-343-4040
(EXTENSION 250)

*In Massachusetts, call 800-322-1123, extension 250.



digital

CDC Ups Cyber Line, Cuts Memory Prices

MINNEAPOLIS — Control Data Corp. has enhanced its Cyber 200 supercomputer line, reportedly boosting the system's central memory capacity by 100%. At the same time, the company also restructured its pricing on that product line.

Significant Improvements Seen

Data Storage On the Rise: Study

By Tom Henkel

CW Staff

SAN JOSE, Calif. — Improvements in mass storage and image storage systems, accompanied by a steadily decreasing price, will put electronic storage systems into more firms and into more applications.

So said Strategic, Inc., a research firm, in its latest report, "Electronic Filing and the Outlook for Optical Storage." For at least the next 10 years, the three most popular currently available technologies, magnetic media, micrographic and optical memory will also undergo significant im-

provements, which may change their importance in data processing, the report stated.

With traditional magnetic storage techniques approaching their practical engineering limitations, Strategic predicts that memory manufacturers will make more use of bubble memories as an alternative to disk storage. Some ripe applications for bubble memories include office storage systems, communications networks with embedded directories and data dictionaries.

Automated micrographic systems are (Continued on Page 62)

memories are substantially less expensive than the 4K-bit bipolar technology used in previous CDC systems, central memory prices were reduced.

The Cyber 205 supercomputer is designed to handle computation-intensive problems in areas such as aerodynamics, meteorology, structural analysis, petroleum exploration and production, electronic circuit design, high-energy physics and advanced mathematics, according to the vendor. The Cyber 205 can reportedly produce up to 65,000 results with a single instruction.

The range of software and applications supported by the Cyber 205 includes Fortran 200; the vendor's Vsos operating system; CDC's Loosely Coupled Network; and Mathlib, a package of mathematical programs that reportedly includes vectorized versions of a number of the commonly used libraries for scientific and engineering applications.

Pricing on the Cyber 205 Series 600 models range from under \$5 million up to \$12 million, which reflects price reductions of 14% to 39%, the vendor said. Shipments will begin the first quarter of 1984.

In an unrelated announcement, CDC Ltd. of Mississauga, Ont., said it has developed a megaminicomputer called Cyber 815 that reportedly combines mainframe performance with superminicomputer characteristics. This system is intended for processing applications in manufacturing, petroleum, mining, education, electric utilities, energy and government, according to the vendor.

The Cyber 815 reportedly will not be available to the U.S. market.

CDC can be reached for details through Box 0, Minneapolis, Minn. 55440.

Intelligent Controllers Debut For Multibus-Based Systems

BURLINGTON, Mass. — Two intelligent controllers have been introduced by Xylogics, Inc. for Multibus-based computers.

The Model 450 disk peripheral controller can reportedly address up to 16M bytes of memory and control up to four disk drives per board at speeds up to 1.8M byte/sec. When attached to four disk drives, it can access up to 2.4G bytes of disk storage, the vendor said. This product can reportedly support 8- and 16-bit processors, features automatic error correction and supports overlapped seeks for improved system response. Priced at \$1,500, it can be plugged into computers from Ampex Corp., Control Data Corp., Fujitsu Ltd., Nippon Electric Co., Priam Corp. and others, the vendor said.

The Model 472 peripheral controller, intended for streaming and start-stop tape drives, resides on one single-height Multibus printed-circuit board. It performs at rates comparable with the 450, and operates on systems from Pertec Computer

Corp., Kennedy Co., Control Data Corp. and Cipher Data Products, Inc., according to the vendor. This product is priced at \$1,400.

The controllers will reportedly be available in April. Further details can be obtained from Xylogics, located at 144 Middlesex TnPk., Burlington, Mass. 01803.

Amdahl Trims 6000 Line Prices

SUNNYVALE, Calif. — Amdahl Corp. has announced a 15% price break on its 6000 series storage system, effective immediately. The vendor also upped lease prices from 7% to 16%, depending on system configuration.

The firm also unveiled a two-channel switch for its Model 6880 storage control unit.

A configuration of one 6880 unit and four 6280 disk storage units now sells

for \$249,000 and leases for \$6,940/mo., Amdahl said. The maintenance charge on such a system would be \$830/mo.

The two-channel switch reportedly gives the user more flexibility in configuring I/O devices. The 6880 was previously offered only with a four-channel switch. This product costs \$77,300.

Further details can be obtained from Amdahl at 1250 E. Arques Ave., P.O. Box 470, Sunnyvale, Calif. 94086.

IBM Compatible Data Channel Switches Should have Two Qualities above all else:



1 High Reliability

You switch your peripheral devices to obtain flexibility and most importantly to provide system backup. Digital Industries second generation 3403 Peripheral Switch provides the most reliable and least expensive switching capabilities for IBM and IBM compatible processors.

Digital Industries unique modular switching concept produces a peripheral switching solution which is accomplished at the lowest cost and highest reliability possible. Our users pay for only the switching capabilities they require

2 Low Cost

without the additional overhead characteristic of matrix type switches. Depending on the application, our switching solution can provide in excess of a 75% savings over competing matrix switching systems.

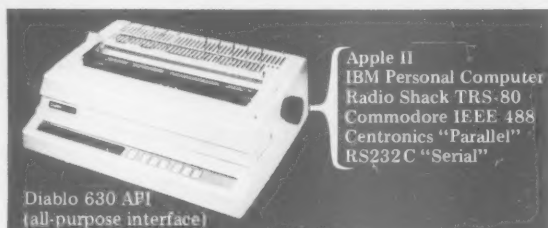
Over 5000 satisfied switching customers attest to our responsive service, product reliability, and low prices. Contact us so we can configure a system for you that will decrease the cost and improve the reliability of your peripheral switching applications.

DIGITAL INDUSTRIES

DIGITAL INDUSTRIES, INC.

2779 Orchard Run Road
Dayton, Ohio 45449
(513) 435-5455

9441 LBJ Freeway
Building A-Suite 620
Dallas Texas 75243
(214) 669-0089



Diablo 630 API
(all-purpose interface)

Apple II
IBM Personal Computer
Radio Shack TRS-80
Commodore IEEE 488
Centronics "Parallel"
RS232C "Serial"

Treat your personal computer to famous Diablo letter-quality printing. MTI has the new Diablo 630 API ready for you.

Now that the Diablo 630 API will interface with most personal computers, there's no reason to settle for less. Look what you get: print speed of up to 40 characters per second with your choice of over 200 metalized or plastic printwheels. In addition, you'll be getting probably the best letter-quality printer on the market today.

MTI is an authorized Diablo distributor, so we can have a Diablo 630 API hooked up to your personal computer within days. And before any unit leaves our warehouse, we test it thoroughly, so you can be sure it will arrive ready to run. Because MTI is a full-service organization, we can also install and service your new Diablo 630 API. If you are not in our area, we can arrange for installation and service.

Whether you rent, buy or lease our equipment, you'll find MTI is the one source for all the terminals, peripherals, systems, applications expertise and service you'll ever need. At good prices. Call us today.

New York: 516/621-6200, 212/767-0677, 518/449-5959

Outside N.Y.S.: 800/645-6530

New Jersey: 201/227-5552

Ohio: 216/464-6688



Applications Specialists & Distributors, New York, New Jersey and Ohio.
DEC, Intel, Lear Siegler, Texas Instruments, Dataproducts, Diablo, 3Com,
Hazeltine, Racal-Vadic, Digital Engineering, MICOM, Cipher and Elgar.

NOT ALL CICS AND VSAM COURSES ARE ALIKE.

OUR HANDS-ON VS. THEIR HANDS-ON.

SysEd students spend fully one third of class time in actual hands-on workshop sessions with our IBM 4341/II—unlike some courses where you're lucky if you even see a computer. Under the guidance of our highly qualified instructors, our students work at their own terminals, coding and running real life programs—not oversimplified "sample programs". With our limited class size, all students receive the individual attention they need, and can bring in programming assignments, debugging or design problems to the workshop sessions.



WE WROTE THE BOOK.

SysEd course manuals are the best in the industry. They are comprehensive guides and programming models written especially for each course by our experienced instructors. They are thorough, clear, and well organized, and serve as desk-top references long after the course. Our manuals are constantly updated to include new versions and more efficient programming methods.

ALL OUR TEACHERS ARE TEACHERS.

All SysEd instructors combine academic skills with broad practical experience in the business environment. They know

programming, and they know how to teach it. In the classroom, they teach not only "how to", but "why", building a solid foundation in fundamentals and insights into advanced materials. Because teaching is a full-time commitment, there are no part-time instructors on our staff. When they're not in the classroom, they're busy writing or updating course manuals, improving techniques, even developing new courses. And they're available to students after the course for additional advice or support.

TEACHING IS OUR ONLY BUSINESS.

Most computer training companies are divisions of large software companies or service bureaus. Not SysEd. Our only goal is to provide top-quality computer training for highly motivated professionals—no more and no less. Because we're independent, we're free to concentrate on teaching—and we do it very well.

OUR PLACE OR YOURS?

SysEd's courses are held weekly and on weekends at our modern, fully-equipped computer centers in New York City, Chicago and San Francisco. Or, if you prefer, we'll arrange on-site courses at your own computer installation. On-site courses can include the same case studies and hands-on approach as our public courses, or can be customized to your particular application or project. SysEd courses include CICS Command Level, Macro Level, Internals, Application Design, Performance Design and VSAM.

Classes are limited. For early enrollment or more information call Dave Shapiro (212) 889-3386.

SYS-ED

ONE PARK AVENUE, NEW YORK, NY 10016 • (212) 889-3386

Utility Becomes First User Of 3380-Like Disk System

By Susan Blakeney

CW Staff

CHICAGO — Commonwealth Edison Co. last month became the first user of an IBM 3380 plug-compatible disk drive subsystem.

The Edison utility is the beta test site for Control Data Corp.'s 33800 controller and 33800 A4 disk subsystem. The products were reportedly attached to both an IBM 3081 computer and an IBM 3033 multiprocessing system running MVS/SP software.

The 3380 disk drive and its look-alikes have caused a great deal of controversy in the computer industry. In fact, producing a product with 2.52G bytes of memory and roughly 10G bytes of on-line storage per string, capable of driving IBM 3033 mainframes, has become somewhat of an industrywide challenge to disk storage manufacturers.

Other Vendors

IBM has recently started to deliver its 3380 drive, reducing backlogs that have occurred since the introduction of that disk system. Meanwhile, Storage Technology Corp. (STC) has announced a plug-compatible version, but will not begin deliveries until later this quarter, an STC spokesman said.

How do the CDC products hold up, and what are the ramifications for IBM? Unfortunately, under the terms of a nondisclosure contract, Commonwealth Edison is unable to comment on the products' performance, according to computer division supervisor Bill Heines.

However, according to the recent-

ly published "IBM Disk Crisis" from Applied Management Systems (AMS), in Medford, N.Y., "IBM has created a major problem by failing to honor its announced delivery dates for the critically needed next generation of data storage products (Model 3380 Disk Drive)."

The report stated that overall demand for disk storage devices will grow by 60% through the middle of this decade. IBM's inability to satisfy this demand might mean its undoing in this product area, according to John Hirsch, vice-president of research at AMS.

Hirsch said, "Competition was expected regardless of IBM's missing the deadline. But the attractiveness of the large-volume disk storage market for [plug-compatible manufacturers (PCM)] became so apparent with the delivery problems.

"The backlog of demand throughout the industry is there. The PCMs recognized a very large window for profit, so they made a crash effort to produce something," he said.

CDC reported that it will produce some 1,000 plug-compatible subsystem units — the equivalent of 2,000 disk spindles each storing 1.2G bytes of data — this year. It predicts even heavier production of this product line for 1984. The heavy volume is projected because of CDC's vertically integrated manufacturing of its own thin-film recording heads, media and disk drives, a spokesman said.

Meanwhile, IBM's 3380 deliveries have cut back on the orders' lead time. In addition, prices on the 3380 and 3880 were recently slashed by 15% [CW, Dec. 27-Jan. 3].

For Scientific Processing

Univac System Uses 1100/82

BLUE BELL, Pa. — Sperry Univac has announced a high-performance scientific processing system that includes the firm's 1100/82 computer.

Based on the Univac 1100/80 Array Processing System, the scientific Vector Processing System (VPS) reportedly provides direct support of interactive graphics/development terminals and data base technology, the vendor said.

The key applications for the VPS cover array or vector computation ar-

reas such as signal processing, weather forecasting, radar/sonar and oceanographic computation. Other uses are in image processing of satellite data and nuclear analysis, reservoir simulation, circuit design and frequency spectrum analysis, according to the vendor.

This product can be purchased for \$4,400,000, or leased for \$122,000/mo on a five-year plan. The vendor is based at P.O. Box 500, Blue Bell, Pa. 19424.

CFR Line Fits Wang VS

HAVERHILL, Mass. — CFR Associates, Inc. has expanded its line of Wang Laboratories, Inc.-compatible peripherals to include VS-compatible 75M-, 90M- and 288M-byte disk storage units and cartridge module drives and Wang 2200 LVP/MVP-compatible 80M-byte cartridge Control Data Corp. Phoenix drives.

Also announced were MVP/LVP-, VS- and OIS-compatible serial and parallel 300- and 600 line/min band and chain printers. All equipment is said to be 100% compatible with Wang VS and 2200 product lines.

Prices for the drives are as follows: \$5,800 for 75M-byte drives, \$6,500 to \$8,500 for 90M-byte drives, \$11,500

for the 288M-byte version and \$6,500 to \$8,500 for the Phoenix drives. Printer prices include \$3,900 for the serial 300 line/min band printer and \$5,200 for the 600 line/min version; \$5,200 for the parallel 300 line/min band printer and \$7,400 for the 600 line/min version; and \$4,300 for the serial 300 line/min chain printer, according to a spokesman.

The units offered reportedly include new as well as used (refurbished) devices at substantial savings. The firm can provide system installations and alternative maintenance programs through alternate vendors. CFR is located at 18 Granite St., Haverhill, Mass. 01830.

The Inspector IV MPC, The Detector II and Protector.*

Super Stars



These Media Management devices from Graham Magnetics keep your computer tapes performing better, longer.

Graham Magnetics' leadership position in computer tape technology has led to the development of three remarkable devices, each designed to do a specific job to reduce drop-outs, tape damage, stoppages and resulting system downtime:

The Inspector IV* MPC—This microprocessor-controlled tape evaluator/cleaner locates and isolates error-prone and damaged tape in your library. It can clean and evaluate a 2400' tape in just 3.6 minutes.

The Detector II*—Also microprocessor-controlled, this tape cleaner uses proprietary vacuum-grid cleaning tech-

nology to remove most error-causing contaminants. It can clean, retension and rewind a 2400' reel in 3.3 minutes.

The Protector*—This patented cleaner employs vacuum technology to remove error-causing debris, including micron-sized particles, from the inside of self-loading cartridges. It automatically adjusts to clean most cartridges in two minutes or less.

Graham Magnetics' position is simple: Put Epoch 480* computer tape in your library, then utilize our Media Management Program® to keep it in top shape. With Graham "Super Stars" in place, your media will last longer and run virtually error-free.

Act Now!—to improve your data center's productivity:

Marketing Services, Graham Magnetics Incorporated, 6625 Industrial Park Blvd., North Richland Hills, Texas 76118

Please send me information on the following Graham Magnetics products:

☐ Complete Media Management Program
☐ Inspector IV ☐ Detector II ☐ Protector
☐ Epoch 480 "Permanent" Computer Tape

Name: _____ Title: _____

Company/Organization: _____

Address: _____ Phone: _____

City: _____ State: _____ Zip: _____

*Registered trademarks of Graham Magnetics Incorporated.



GRAHAM MAGNETICS CARLISLE

Toll Free 1-800-433 7632, 433 7633 In Texas (817) 281 9450

Microcomputers Impacting Storage, Report Says

SAN JOSE, Calif. — Personal computers, or microcomputers, are having the most profound effect on data storage, according to a report recently released by Strategic, Inc.

While microcomputers tend not to employ major innovations in storage technology, they have created a situation where relatively inexperienced users set up and control their own elec-

tronic files, often replacing paper filing systems.

The research firm noted that today about 887 billion paper documents are stored in various personal, business and archival files. Even if the price of electronic storage stayed at its current level for the next 10 years, the soaring cost of managing paper documents would make electronic storage an attractive option, if not a necessity.

One of the key uses for microcomputers includes the ability to interconnect systems to provide files for correspondence and management reporting. Microcomputers can also be used to

create relatively cheap graphics, Strategic said, noting that more than one million units will be installed in businesses by 1986. However, the widespread use of microcomputers is not without

problems. The units, at least at this point, tend to be difficult to interface with larger processors and appear to have difficulty in image processing applications, according to the report.

Storage System Use Seen Rising

(Continued from Page 59)
often practical for very large files with relatively low ac-

cess but rapid response requirements. But the technology, which now includes

microfilm and microfiche, will probably peak in the mid- to late 1980s, Strategic said.

Optical memory, the ability to store images as well as data, is currently most popular in the form of videodisks. However, the technology is relatively new, and few actual products are available. An optical disk has a high recording density, at least four times the density of IBM's biggest disk drive, the 3380, Strategic said. Optical disks tend to have access times similar to magnetic disk drives and very favorable times when compared to mass storage subsystems. But Strategic noted the technology is not without problems.

Strategic said that most of the problems stem from the newness of the technology. For example, despite some claims that optical disks can last for up to 100 years, those claims have yet to be proven. Erasability is another controversial issue. Most commercially available optical disks cannot be erased (although some vendors say they have developed technologies to erase optical disks).

Hardware compatibility is also a problem. At this point, there is no industry standard for linking optical disks to computer systems. This fact will keep the price for optical memory products relatively high until a standard is approved, the firm said.

Finally, Strategic noted that currently there is little software available to support optical disks.

The Strategic report costs \$2,000 and is available from the vendor at 4320 Stevens Creek Blvd., San Jose, Calif. 95129.



UNIX, with change.

Idris is a trademark of Whitesmiths, Ltd. / UNIX is a trademark of Bell Laboratories.

Put off by the UNIX price tag and licensing restrictions? If you are, take a closer look at Idris.

Idris gives you all the power of UNIX at a fraction of the cost—and they're highly compatible—even pin-for-pin in some cases. Upfront expenses are much lower, you only pay for the parts you ship, and the end-user licenses can be transferable.

What's more, we wrote Idris ourselves—from the ground up—so you'll have fewer licensing hassles. We wrote it almost entirely in C, for maximum portability across a wide

range of processors. And we kept it small.

Idris can run comfortably where UNIX can't even fit: On an MC68000 with no memory management hardware, for example. On a bank-switched 8080 or Z80. Or on any LSI-11 or PDP-11 with memory management. A very big Idris plus.

Find out how you can put Idris to work in your favorite configuration today. Write Whitesmiths, Ltd., 97 Lowell Road, Concord, Massachusetts, 01742. Or call (617) 369-8499, TLX 951708 SOFTWARE CNCM.

With Idris, you pocket the change.

Whitesmiths, Ltd.

Crafting Software Tools for your Trade.

Distributors: Australia, Fenwick Pty Ltd. P.O.B. 224 Hurstville NSW 2220 (612) 570-6100
Japan, Advanced Data Controls, Corp., Chiyoda-ku, Tokyo (03) 263-0383
United Kingdom, Real Time Systems, Newcastle upon Tyne 0632 733131

Get Graphics On Your DEC® LA120

DECPlot™ upgrades your DEC LA120 to print graphics fast—only 35 seconds per average page. Just \$595. Need color too? Get DECOLOR™. Only \$995. Fully compatible with most graphics software and CRT display terminals.

NEW! VT-125 COLOR PRINTER INTERFACE \$495

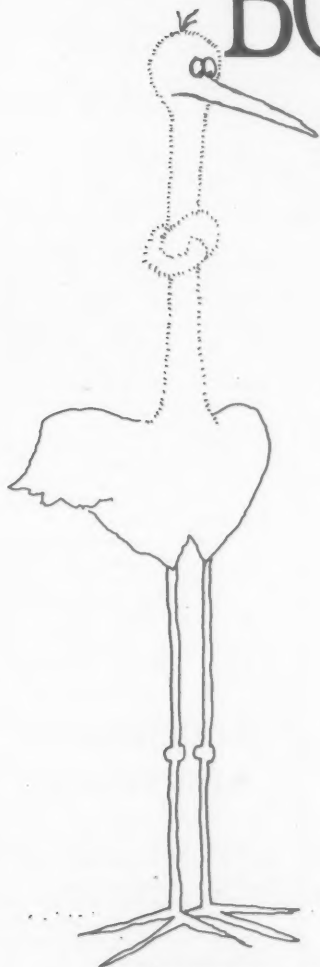
Textprint's simple plug-in modules require no extra custom software for dot-addressable or character-graphics applications. Expand LA120 performance, yet preserve all original functions. Available now from Textprint or DEC distributors.

*Registered trademark of Digital Equipment Corp.

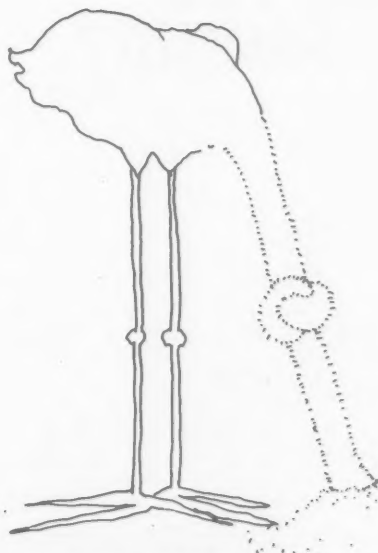
TEXPRINT

TEXPRINT, INC.
8 Hightower Rd.
Beverly, MA 01915
(617) 273-1384

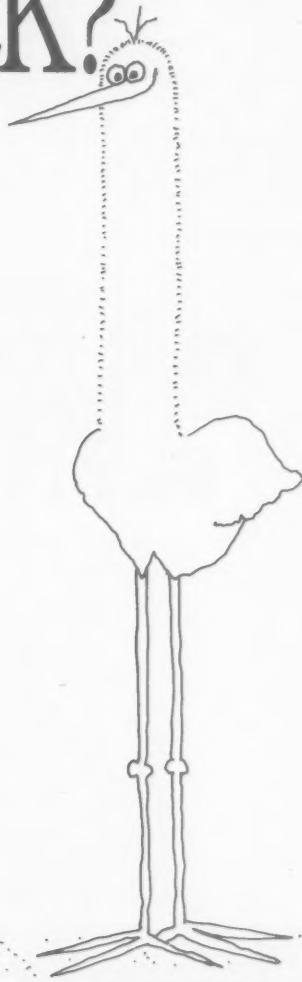
HOW'S YOUR CPU-TO-DISK BOTTLENECK?



"IT'S A PROBLEM."



"IT'S NOT A PROBLEM."



"NO PROBLEM WITH SYBERCACHE."

As processor speeds increase, systems have become constrained by the slower speed of the I/O devices that feed them data. The resulting CPU-to-disk bottleneck can literally starve your current system.

The Sybercache Intelligent Controller eliminates the speed differences between large or intermediate processors and the broad range of Storage Technology disk drives, reducing I/O times by as much as 75%.

This means significant gains in system throughput with no changes in software or media. Full hardware and software compatibility with 4341, 370/135-168, 303X and 308X (or equivalent) CPUs, plus automatic tuning, make Sybercache implementation easy.

To find out more, clip the coupon or call (303) 673-4063.

Storage Technology 

Show me how to beat the I/O Bottleneck.

Name _____
Function _____
Company _____
Address _____

Mail to: Storage Technology Corporation
Product Marketing, Mail Drop 3K
Louisville, Colorado 80028

Basic Four Cuts S/10 Cost \$1,000

ALBUQUERQUE, N.M. — Basic Four Business Products Corp. has announced a \$1,000 price reduction on its S/10 small business computer, which now sells for \$4,995. The price of the Office Display Terminal, the add-on terminal for the S/10 system and larger Basic Four computers, was also cut and it now costs \$2,595.

Based on twin Zilog, Inc. Z80 microprocessors, each with 64K bytes of random-access memory, the S/10 system comes with two dual-density 5¼-in. diskette drives with 630K bytes each.

Basic Four is at 601 San Pedro N.E., Albuquerque, N.M. 87108.

For Board Design

Genrad Unwraps CAD Net Unit

CONCORD, Mass. — Genrad, Inc. has unveiled Cadmate, said to be the latest in a series of networking products offered by the company to enhance the manufacturing process for computer-aided design (CAD) of electronic equipment.

Cadmate's hardware and software utilities reportedly allow a user to download automatically description files for printed-circuit boards from a Computervision Corp.; Applicon, Inc.; Scientific Applications; or Rascal-Redac, Inc. CAD system to Genrad automatic testing equipment systems.

The product reduces the time and cost involved in the manual data en-

try formerly required to generate board-test programs, a spokesman said. It operates in conjunction with software supplied by the CAD system manufacturer to create file descriptions of printed-circuit board circuits. To meet specific user requirements and hardware configurations, Genrad supports five different options for file transfer: IBM's 2780 bisynchronous communications,

Digital Equipment Corp.'s Decnet and nine-track magnetic tape, floppy disk (RX01 and RX02) and paper tape.

The Cadmate package, including hardware, software and documentation, is available for immediate delivery. Prices begin at \$16,500, depending on configuration, from the vendor located at 300 Baker Ave., Concord, Mass. 01742.

SSI Unveils IBM Interface

FORT LAUDERDALE, Fla. — Southern Systems, Inc. (SSI) has announced IBM 3270 Type A and B in-

terfacing capability for its line of printer systems.

The IBM compatibility is available as a complete printer system functioning with SSI's M, B and QT series printers in speeds ranging from 200 to 1,800 line/min.

System/34- and System/38-compatible printer systems are also available and include twin-axial connector with cable-through, transparent mode and an auxiliary diagnostic panel, the vendor said. SSI printer systems for IBM System/34 and System/38 start at \$5,500.

Type A 3270 connections are said to be Synchronous Data Link Control-compatible with IBM cluster controllers 3274 and 3276 with A coaxial connectors.

Type B is bisynchronous and attaches to IBM cluster controllers 3271, 3272 and 3274 with B connectors.

Printer system prices for the IBM 3270 Type A and B interfacing start at \$4,500 from SSI at 2841 Cypress Creek Road, Fort Lauderdale, Fla. 33309.

ONCE YOU PICK YOUR PACKAGE HOW DO YOU GET IT RUNNING?



How do you overcome the "not invented here" syndrome? Who selects applications software packages? What criteria do they use? This February 28th *Computerworld* Special Report on Applications Software will take you from selection to implementation with special emphasis on the issues that become relevant once you get your packages in house.

This special report is going to give you the kind of information you need to get the packages you select up and running. You'll get case histories and application stories that describe the experiences of users of specific packages. You'll also get tutorial, and non-product-specific articles that will examine different issues and concepts around purchasing and implementing software application packages. Here's the questions you'll get answers to in February's special report:

- How are canned solutions better than home-grown software?
- Is "end-user friendliness" a reality in applications packages?

- Conversion: When is it possible? How is it achieved?
- How much customization is necessary when installing a package?
- How long does it take to get an application package up and running, compared to in-house systems? What is the procedure?

If you use, buy or need applications software packages, you won't want to miss this special report. Turn to *Computerworld* next February 28th — and get your packages off and running.

And if you market applications software packages — here's where you'll find your customers. They'll be turning to *Computerworld* to get all the information they can on what's available and how to make it work. Your ad in this issue will insure them more complete information on the products in the field. Ad close for this Applications Software Packages Special Report is February 11th.

Call your local sales person at the offices listed below, call Don Fagan, Vice President, Sales at (617) 879-0700.



COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

BOSTON/Chris Lee, Ed Marecki, Joe Fitzhugh, Jim McClure, Kathy Doyle, Diane Sukey, (617) 879-0700
CHICAGO/Art Kossack, Newt Barrett, Marguerite Winkler, Chris Lee, (312) 827-4433
NEW YORK/Mike Masters, Doug Cheney, Ray Corbin, Joan Daly, Fred LoSapio, (201) 967-1350
SAN FRANCISCO/Bill Healey, Barry Millone, Teddie Franson, A.G. Germano, Eileen Dunn, (415) 421-7330
LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, (714) 556-6480

Transformer Announced

CARSON, Calif. — Computer Power Systems, Inc. has announced an isolation transformer for medium-to large-scale systems.

Called Iso-Max, the unit was designed to help protect systems from power disruptions such as transients and electrical noise.

The unit features ultra high-grade electrostatic shielding, all-copper shielding and voltage adjustment taps, the vendor said.

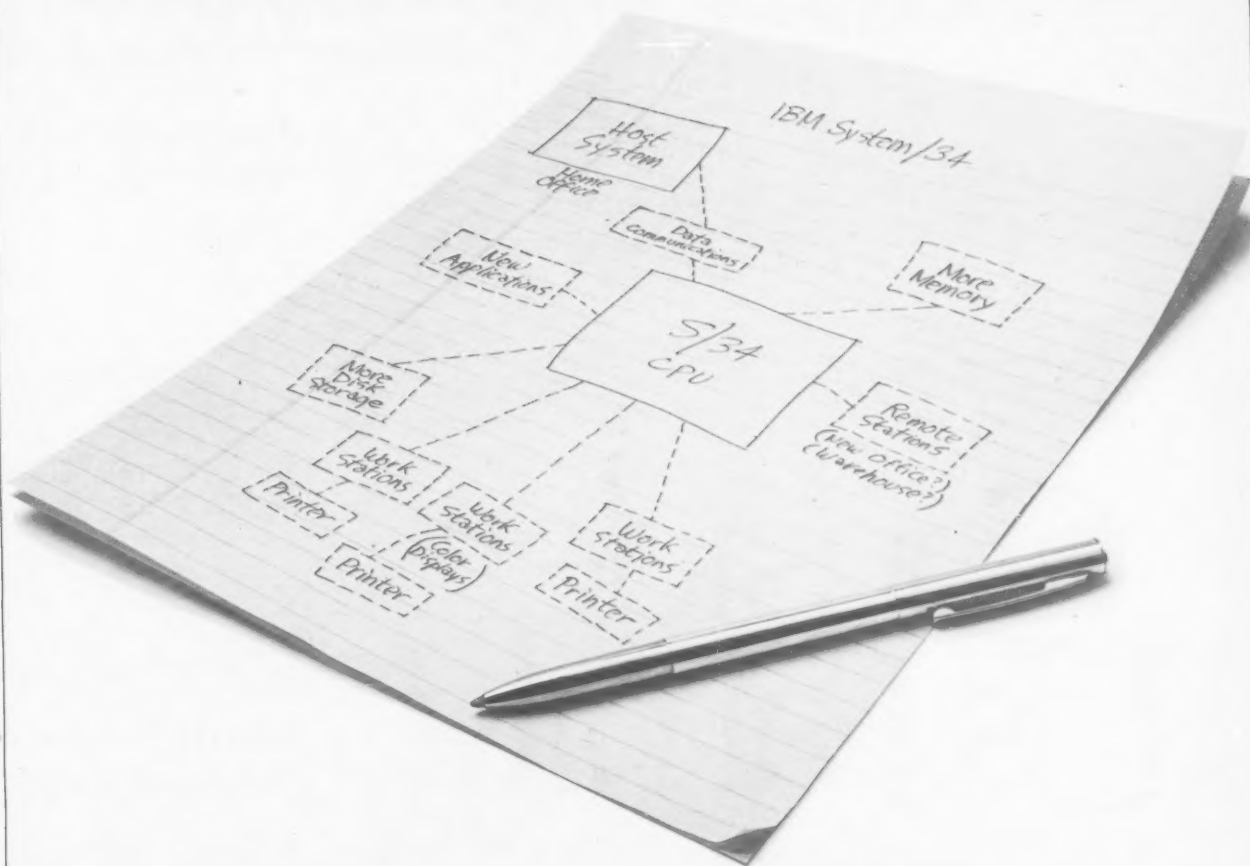
Units cost from \$1,110 to \$3,500, the vendor said from 18150 Figueroa St., Box 6240, Carson, Calif. 90749.

MANTIS* USERS FREE CICS PRINTER EXIT

Call or write today
LONNIE LANZER
AMER-CAL INC.

115 E. University Drive
Arlington Heights, IL 60004
(312) 398-4700

*Cincom's powerful fourth generation language.



Plan for the Unplanned.

IBM System/34 grows and changes as you do...

... even if you didn't expect to.

The best-thought-out plans do change. Your business can change or grow unexpectedly—and what happens to that data processing system that used to work so well?

System/34 makes life simpler. It's easy to combine and configure the right printers, storage capacity, work stations, color displays and other elements to handle your changing requirements.

You can start as simply as a central processor, work station and

printer. Grow in easy stages to a complete communications network, addressing up to 16 local and 64 remote work stations and a wide range of other systems. Link up to an even larger network. Choose from hundreds of industry program packages as well as word processing.

In all, we designed System/34 to be very easy to use, by DP professionals and nonprofessionals alike.

And System/34 is made to grow.

Main memory begins with 32K bytes and increases in five increments to 256K bytes. Its architecture allows highly efficient use of this memory.

Disk storage starts at 8.6 megabytes and grows to 257 megabytes.

And System/34 speaks your language. You name it: it can use RPG, FORTRAN, COBOL, BASIC and Assembler.

When it comes to your business, it's not just *whether* you grow. It's also *how*. And, whatever your company's coming to, it's good to have System/34 on your side.

When things don't work out as planned. And when they do.

To arrange for a free demonstration of the System/34, call your local IBM representative or IBM Direct's toll-free numbers below.

IBM

Call IBM Direct 1 800 631-5582 Ext. 90. In Hawaii/Alaska 1 800 526-2484 Ext. 90.

Integrated Accounts System Aids Small Businesses

GLENVIEW, Ill. — Zenith Data Systems Corp. has introduced the Integrated Accounting System, which was designed to aid small businesses in transferring their bookkeeping systems to desktop computers.

The bundled hardware/software system was designed to offer speed and ease of use through the inclusion of a high-speed Winchester disk drive. Accounting functions such as general ledger, accounts payable and receivable, sales invoicing and inventory management are on the main menu.

User time is saved by eliminating the need to find a diskette and load a new program when going from func-

tion to function, a spokesman said.

Included is the Zenith Z89 computer with memory expansion to 64K bytes of random-access memory, Z67 Winchester disk drive with 8-in. floppy back-up, Magic Wand word processing, Digital Research, Inc.'s CP/M, Microsoft Corp.'s Microsoft Basic and five Peachtree Software, Inc. accounting packages.

A reference guide is also provided with the system to aid the transfer of the user's bookkeeping system onto the desktop computer.

The suggested retail price of the package is under \$7,000. Zenith Data Systems is located at 1000 Milwaukee Ave., Glenview, Ill. 60025.

For Small-Business Mart

Dual Microprocessor Out

AUSTIN, Texas — Challenge Systems, Inc. has released a dual-microprocessor computer system designed for the small-business market.

The CS1000 can be configured as a single-user, entry-level system or be expanded to a multiuser system with multitasking and networking capabilities, the vendor said.

Hardware for the entry-level system includes the dual processors with 64K or 128K bytes of random-access memory; a CRT display, a detached keyboard; and two 8-in. double-sided, double-density floppy disk drives. It operates on Digital Research, Inc.'s CP/M and I/OS.

Pricing for this product ranges from \$5,000 to \$15,000. Sales are be-

ing handled by Systems Sales International, Inc. at 509 W. 18th St., Austin, Texas 78701.

Corona Updates Disks, Cuts Price

WESTLAKE VILLAGE, Calif. — Corona Data Systems, Inc. has announced price reductions and enhancements on its line of 5¼-in. Winchester disk subsystems for IBM's Personal Computer and Apple Computer, Inc.'s Apple II microcomputers.

Prices on the Personal Computer hard disk, available in 5M- and 10M-byte capacities, have been cut \$200 to \$1,795 and \$2,295, respectively. Prices for similar drives for the Apple II were cut by \$300 to \$2,195 and \$2,695, respectively, the vendor said.

In addition, the firm announced an external version of the Personal Computer hard disk. The unit sits outside the IBM processor and is available in 5M- and 10M-byte capacities. The 5M-byte version costs \$2,195 and the 10M-byte unit costs \$2,695. The vendor is located at Suite 110, 31324 Colinas, Westlake Village, Calif. 91361.

Matrix Printer Out for TRS-80

FORT WORTH, Texas — Radio Shack has added a dot matrix printer with graphics capability to its line of TRS-80 microcomputer peripherals.

The DMP-100 reportedly prints 50 char./sec at 10 char./in. (80 col at 276 line/min) and has a bit-image mode to allow printing of fully addressable, high-density graphics. Using an optional screen-print program, the DMP-100 can produce detailed black-and-white graphics printouts similar to those on the TRS-80 Color Computer screen display.

The printer features 80 uppercase and lowercase five by seven dot matrix characters that can be printed on an 8-in. line with underline capability; a 480-byte, full-line dot buffer to increase graphic throughput; selectable parallel and serial interfaces (600/1200 bit/sec); and 4½-in. by 9½-in. fanfold paper, the vendor said.

The printer measures 5-5/16-in. by 16-in. by 8¼-in. and operates from 120 Vac, 60 Hz power and 15W. It costs \$399 from Radio Shack Computer Centers and stores.

Consider Us Family.

When you are looking for the best long term means of capitalizing on today's new generation of 68000 based computers, don't confuse WICAT with other micro vendors. The WICAT family supports 1 to 32 users with mainframe software and minicomputer performance at microcomputer prices. Our complete system software offering makes it almost trivial to port your application packages. Operating systems include MCS and UNIX* (UniPlus*) with language support including RM COBOL, FORTRAN 77, DIBOL* (DYBALL*) APL, PASCAL C, CIS COBOL, and BASIC.

WICAT began installing, maintaining and enhancing our 68000 based product line over two years ago and maintains the technological lead in this market. We offer OEMs a unique relationship, indeed a partnership of two-way assistance and flexibility. WICAT is serious about your future. Consider us family!



System 150
1 to 6 users
256 KB - 1.5MB RAM
10-60MB Winchester Disk Storage

System 160
1 to 12 users
512KB - 4.5MB RAM
10 - 474MB Disk

System 200
8 to 32 users
512KB - 5 MB RAM
40MB - 474MB Disk (x4)

Get to know the WICAT Family. Call your local OEM Sales Manager:



WICATsystems

P.O. Box 539 1875 South State Crem, UT 84057 (801) 224-6400

- A Jim Camilleri (San Francisco) (415) 834-6723
- B Dennis Hunter (Utah) (801) 224-6400
- C Bruce Baillo (Dallas) (214) 387-3303
- D Gene Gentges (Chicago) (312) 630-0010
- E Jim Ryan (Cleveland) (216) 831-5737
- F Watson Coverdale (New York) (212) 697-4740

WOLFE-TEST YOUR EDP JOB CANDIDATES...

... In depth & job-related
Competitive tests are merely multiple choice!

Uniquely designed to evaluate:

APTITUDE:
• PROGRAMMERS
• ANALYSTS
• OPERATORS

KNOWLEDGE:
• COBOL • MVS
• DOS/VSE • IMS
• CICS • TSO/SPF

Call Toll Free or write:

WOLFE COMPUTER APTITUDE TESTING

Box 319, Uradell, N.J. 07649

1-800-431-1953 Ext. 828

In N.Y. State

1-800-947-1035 Ext. 828



EASTERN'S SPRINT. WHEN IT DEFINITELY, UNQUESTIONABLY HAS TO BE THERE TODAY.



Most air-freight companies spend the day on the ground, racing to pick up small packages. So they can deliver them overnight. At Eastern Airlines, we spend that time in the air, delivering small packages to over 90 cities throughout the U.S. *The same day.* Just have your package at the Eastern airport counter at least 30 minutes before flight time. We'll put it on our next flight out and guarantee that it arrives the same day.* Or you don't pay. The guys who "fly-by-night" simply aren't up to that kind of service.

© 1983 Eastern Air Lines, Inc.

 **EASTERN**

SPRINT
SAME-DAY PACKAGE SERVICE

Door-to-door delivery available for an additional charge. Call toll-free at 800-336-0336.

*Guaranteed same-day delivery requires that package be on a flight scheduled to arrive before midnight.

When researching a problem,
how do you instantly highlight
anything you want in your
financial data base?



You use the new HiLite from
McCormack & Dodge.

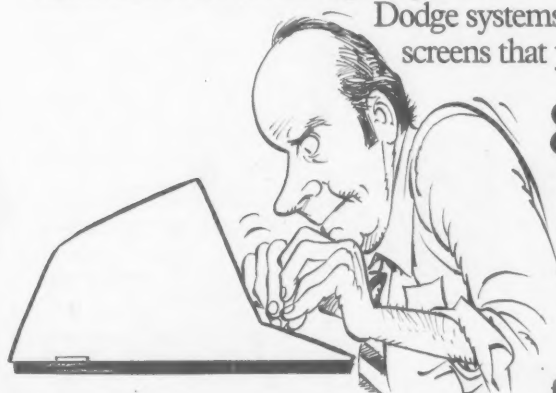
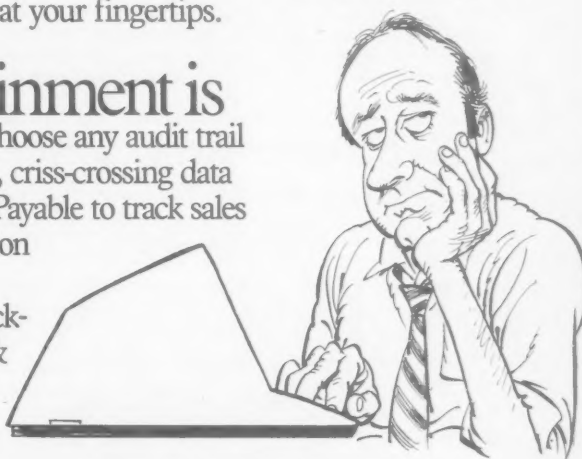


8:00 a.m. The boss says sales expenses are too high.

HiLite is a true accounting breakthrough. It lets you come up with answers in minutes instead of hours or days. No on-line query system in the world matches its ability to research day-to-day problems. It literally puts every piece of financial information you have at your fingertips.

8:02 a.m. Travel and entertainment is out of whack.

With HiLite, you can choose any audit trail and follow it to completion, criss-crossing data bases at will. Move from General Ledger to Accounts Payable to track sales expenses. Shift into Fixed Assets to pinpoint depreciation discrepancies. Change course 180 degrees and probe Personnel/Payroll for minority quota details. Search backwards and forwards through any and all McCormack & Dodge systems, using the screens that you've built.



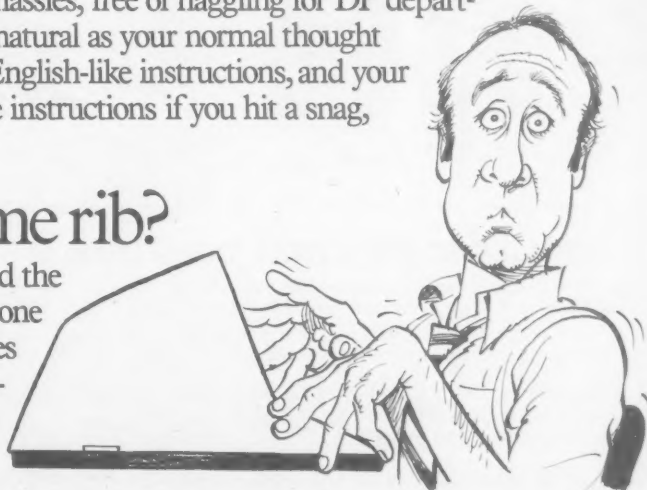
8:04 a.m. Let's look at salesmen's expense reports.

Remember overnight turnaround times? Remember inching your way through mountains of paper? With HiLite, these are problems of the past. Because you can pursue your investigation with ease at your own desk, free of hassles, free of haggling for DP department time.

You use a command process that's as natural as your normal thought process. You just fill in the blanks with friendly, English-like instructions, and your answer pops up on the tube. You even get on-line instructions if you hit a snag, simply by pressing a button.

8:06 a.m. \$1,000 for prime rib?

HiLite infinitely expands the dimensions—and the value—of all McCormack & Dodge systems. It's one more example of an idea other software companies are only talking about, but we're releasing as a finished product. One more example of tomorrow's software today.



McCormack & Dodge (800) 343-0325



General Ledger, Personnel/Payroll, Accounts Payable, Purchase Order Management, Fixed Asset Accounting, Capital Project Analysis. McCormack & Dodge Corporation, 560 Hillside Avenue, Needham Heights, MA 02194. Sales and support offices throughout North and South America, Europe, Asia, Australia and South Africa.

Optical Mouse Announced For CAD/CAM Applications

BRISBANE, Calif. — An optical mouse, designed to ease cursor positioning in computer-aided design and manufacturing (CAD/CAM) applications has been introduced by the Computer Products Division of USI International.

Called Optomouse, the device consists of a small box with two rocker switches that roll on the x and y axes on a flat surface. The position of these switches and the box reportedly communicate movement to the computer.

This mouse reportedly works with any CAD/CAM, graphics or personal computer with an RS-232 bus interface. It costs \$300, the vendor said from 71 Park Lane, Brisbane, Calif. 94005.

STS System for Managing Pay-TV Subscribers Bows

EASTCHESTER, N.Y. — A system for managing pay-TV subscribers has been released by G and Z Systems, Inc.

STS reportedly handles all subscriber invoicing, receivables and maintenance reporting and provides a variety of reports on maintenance problems, such as apartment building totals and building owner's commissions.

The system has a 6,000-subscriber capacity and comes with a 6.7M-byte hard disk and integral cartridge-tape backup, as well as a high-speed dot matrix printer and a single terminal.

The STS systems start at \$15,490

from G and Z Systems, 187 Main St., Eastchester, N.Y. 10707.

Turnkey System Debuts For Publishing Industry

GLENDAL, Calif. — The National Accounting Equipment Corp. has announced a turnkey system especially tailored for the publishing industry.

Publisyst is composed of a number of separate software modules: accounting/advertising, circulation/reader service, editorial/word processing and print production. A data base management system is also included to provide each user with the ability to modify his system in order to satisfy his personal set of requirements, according to the vendor.

Bits & Pieces

The bundled turnkey is priced at \$50,000, the vendor said from 6814 San Fernando Road, Glendale, Calif. 91201.

Presentation Packs Support Tektronix Digital Plotters

BEAVERTON, Ore. — Tektronix, Inc. has introduced three presentation products said to support the company's 4662 Option 31, 4663 and 4663S Interactive Digital Plotters.

Collectively called Presentation Packs, these products include 50 sheets of Tektronix's new Quick Dry Plotter Film, a new multicolor ninepen pack, 25 frames and a covered pen tray and storage box. The transparent film provides high-quality visuals that dry in seconds, according to the vendor.

Each Presentation Pack is priced at \$60, and Tektronix can be reached through P.O. Box 500, Beaverton, Ore. 97077.

IEEE-488 Interface Added To TDX Tape Subsystems

HALESITE, N.Y. — TDX Peripherals Division of Gaw Control Corp. has added an IEEE-488 interface to its family of tape subsystems.

The IEEE-488/General Purpose Interface Bus is said to be compatible with Ansi and IBM 1/2-in. formats and is suitable for hostile environments. Automatic error control and dual-buffered recording are standard features.

The unit operates in programmable and nonprogrammable modes and contains programmable control, search and edit capabilities, the vendor said. Prices start at \$7,000 for a fully interfaced system from the firm at 148 New York Ave., Halesite, N.Y. 11743.

Series 81000 Power Systems Out in 50-Hz, 60-Hz Models

SAN DIEGO — Topaz, Inc. has announced a series of uninterruptible power systems (UPS).

The Series 81000 is comprised of a line noise suppressing Ultra-Isolator, rectifier, battery charger, battery, static inverter and transfer switch. The use of a separate battery charger and rectifier is said to be a unique design that eliminates the need to regulate dc power to the inverter.

The Series 81000 UPS is available in 50-Hz and 60-Hz models and in power ratings from 3 KVA to 15 KVA. Prices start at \$10,800 from the firm at 3855 Ruffin Road, San Diego, Calif. 92123.

Electronic Mail/Office Automation Offers New Telecommunications Profit Opportunities!

Just a few years ago, office automation was a word processor and stand-alone pool. Now, thanks to electronic mail, teleconferencing and facsimile, office automation affects every corporate person and poses major new management traffic problems for telecommunications.

COMMUNICATION NETWORKS' program, acknowledged to be the best in electronic mail since 1980, now encompasses the full management impact of telecommunications-based OA.

Hear these big thinkers in the communications field:



Amy Wohl
"Strategic Planning"



Dr. John McQuillion
"Multivendor Environments"



James Blair
"Computer-Based Message Systems"



Elliot Gold
"Teleconferencing Video"



Dr. Michael Zisman
"Datacom & OA Bridges"



Carol Gaffney
"How to Fail at OA"



Susan Pereya
"Teleconferencing Audio"



Dr. Cornelius Sullivan
"EM/OA Competitive Edge"



Jerrold Eisen
"Power Politics in OA"



Ted Myer
"Standards for CBMS"



Tom Hannagan
"Comparing CBMS"

These experts and more will present more than 20 sessions in Electronic Mail and Office Automation.

WIN A DEC PERSONAL COMPUTER!

Special grand prize drawing on Tuesday evening, February 1 for a Personal Computer from Digital Equipment Corporation. Other prizes will be announced.

Cost for CN '83 general sessions and exposition is \$445. Exhibit hours are 10 a.m. to 4 p.m. on Monday, January 31 and Tuesday, February 1, and 10 a.m. to 2:30 pm on Wednesday, February 2.

Register now for COMMUNICATION NETWORKS Conference Session & Exposition by calling Louise Myerow, Registration Manager, toll-free 1-800-225-4698 (617)-879-0700 in Mass.).

The Rivergate New Orleans, Louisiana January 31-February 2, 1983



375 Cochituate Road
Box 880
Framingham, MA 01701
(617) 879-0700

DP DIRECTORY Lists NY Metro/NJ, & CT Users & Vendors

- The Source to a Multi-Billion Dollar Market
- The #1 DP Market in the World
- Over 11,000 Computer Users Listed
- Over 4,000 Computer Vendors Listed
- Over 15,000 Top Computer Executives
- Installed Mainframes & Minicomputers Listed
- FUTURE PLANS: Projected upgrades, disk cards, acquisitions of hardware and software specified with dates in user section and index
- Fortune 500 Fortune 1000 and major non-industrial companies listed
- RJE & Timesharing with computers at other locations specified in user section and hardware index
- Company, division, address, industry, main phone #, contact's name, title, functional area, direct phone # or ext., major hardware installed, major software used, consultants used, applications, & misc. info
- 117 indexes by type of Hardware, Software & Industry (e.g., CICS, IMS, VM, IBM 303X & DEC PDP RPL etc.)
- Key Financial Executives & EDP Recruiters listed
- Chain of command of executive personnel indicated

PRICE - \$400.00 ORDER - Mail check to:
Computer Management Research, Inc.
20 Waterside Plaza, Suite 1-C
New York, NY 10010
212-683-0606

Inadequate Training Cited User Fears Still Block OA: Consultant

By Jim Bartimo
CW Staff

While computer literacy is impossible to measure, experts agree that acceptance from the executive and the secretary is growing. But computer accep-

tance is still deterred by longstanding fears of displacement, inadequacy and loss of control. These issues are often compounded by those who control high technology in the office when inadequate training is combined with poor communications.

"A lot of people in this [computer] business are mostly

aware only of the good stuff about automation," said Thomas Hannagan, president of the consulting firm, Thomas A. Hannagan & Associates, Inc. "But they don't recognize that there are other factors and people don't think it's such a great thing."

MIT's Harley Shaiken, an outspoken critic of poorly im-

plemented office automation, said that computer literacy is indeed increasing, but only in spite of the problems. "I don't think there's an inherent resistance to technology," he said.

First Taste

When middle managers get their first taste of technology, problems arise for the technology provider. "The technology provider has to recognize that he's dealing with a different equation than before," Hannagan said. Automation had often been directed at the blue-collar worker who is used to taking orders, but now "the executive is a little harder to push around."

"In a factory, people are cogs in the procedure," Hannagan said. "This is less so than in the office, but people are being automated" more so than are procedures, he continued.

On the clerical level, computer acceptance develops in stages, according to Janice Blood of 9 to 5, the National Association of Working Women. "Generally what we've found is that initially everyone is excited about it," she said. "The second stage is that they're disappointed and haven't had enough training. That leads to people having complaints."

Implementation is as important an issue at the clerical level as it is at the management level. If the technology provider or upper management uses automation to make work routine, there will often be dissatisfaction and eventually, turnover, Blood said. Acceptance of technology depends on what is done with the extra time pro-

(Continued on Page 72)

Wang Extends Remote Net

LOWELL, Mass. — Wang Laboratories, Inc. has introduced three enhancements to its Remote Wangnet wide-area network. The enhancements are: an increased number of workstations, document transfer capabilities between support systems and extended low-end support capacity.

Remote Wangnet is a distributed networking facility said to enable users of the Wang VS, OIS, 2200 and Professional Computer systems to share processing resources and files in geographically remote environments, providing a mix of distributed and centralized processing.

License fees for the Remote Wangnet software range from \$150 to \$1,800 depending on the amount of hardware and user requirements from One Industrial Ave., Lowell, Mass. 01851.

NCR Boosts Worksaver; Offers Graphics Package



NCR Worksaver Workgraph

DAYTON, Ohio — NCR Corp.'s Office Systems Division has unveiled an addition to its Worksaver word and information processing family and a business graphics package that operates with optional Multiplan software on the WS-200 series.

The WS-150 can function as a stand-alone system, cluster station or master station for a departmental system supporting up to four additional workstations selected from the Worksaver 100 or 200 series.

System features include 384K bytes of random-access memory expandable to 512K bytes; a dual-density, double-sided 5¼-in. miniflexible disk and a sealed 16M-byte mini-Winchester drive, all housed in a desktop processor cabinet. The maximum storage capacity of the mini-Winchester drive is equal to approximately 2,700 pages of information, the vendor claimed.

The WS-150 may be purchased for \$10,995 or rented on 12- or 36-month plans for \$408 and \$348/mo, respectively.

The new business graphics package is known as Workgraph. It is capable of producing line, bar, pie and combination charts of varying sizes, according to the vendor. Receiving statistical information directly from the Multiplan software, it reportedly allows easy transformation of that information into varied graphics forms.

The package requires a

graphics board, costing \$1,750, and a software interface, costing \$250 on a one-time license basis or \$132 annually.

A graphics plotter is also available for \$1,150 or on a lease basis for \$60/mo on a one-year plan and \$48/mo on a three-year plan.

NCR's Office Systems Division is located in Dayton, Ohio 45479.

From Any Phone

Voice Mail Supports 100



BRIGHTON, Mass. — Voicetek Corp. has introduced a low-end stand-alone computerized voice mail system said to support 100 users.

The Voicestor-M/100 permits users to place, retrieve and forward voice messages and

verify delivery. Messages can be placed from any telephone for retrieval at a future time. They can be retrieved from any telephone or delivered to any one or more parties immediately or at a specific time.

Users can also forward received messages to other parties, adding their own remarks. Recorded prompts lead users through a variety of transaction options. Message capacity ranges from 400 to 20,000 messages or up to 120 hours of messages. Larger systems that will support 2,000 are also available.

The system was designed to be used with all existing telephone switching systems including both on-premises Private Branch Exchange and off-premises switching equipment, the vendor claimed.

The Voicestor-M/100 system is available for \$49,500 from Voicetek, 15 Soldiers Field Place, Brighton, Mass. 02135.

WP Package Fits VAX-11

BURLINGTON, Mass. — Interactive Systems, Inc. has announced a native-mode word processing package for Digital Equipment Corp. VAX-11 computers.

Digitext contains the facilities to create, manage and maintain documents, standard text, address files, correspondence and other files defined by the user, the vendor claimed.

Utilizing the menu approach, the user is guided through the various operations of the package. The major components of Digitext include a file manager, text editor and a print facility that supports a variety of matrix and letter-quality printers, a spokesman for the vendor said.

Digitext also provides a utility module to convert Digitext files into sequential files and vice versa, as well as the capability to maintain an unlimited number of names and addresses for use in correspondence and bulk mailing, according to the vendor.

Priced at \$7,500, the package is available from the vendor at 131 Middlesex Tnpk., Burlington, Mass. 01803.

DEC-Compatible Tools Repriced

PLACENTIA, Calif. — Data Processing Design, Inc. has announced a new pricing structure for its Digital Equipment Corp.-compatible software packages — Word-11 word processing and IB Graph business graphics.

Pricing is now based on the size of the DEC processor instead of the type of operating system, a vendor spokesman said.

The Word-11 Version 2.8 offers list processing, built-in dictionaries, automatic table of contents, footnoting and other features. The new prices for the package range from \$3,500 to \$9,500, depending on which DEC machine it runs on.

The IB Graph package is now available for use on RSTS/E systems

for between \$5,500 and \$7,500, depending on the machine. More information is available from Data Pro-

WP Conversion System Out

CARSON, Calif. — A word processing conversion system has been announced by Tigor Printing Group, Inc.

The system provides automatic conversion of a customer's existing word processing data to a new system format. According to the vendor, the system will be offered to law firms and corporate clients whose data bases require conversion as a result of mergers, the unification of systems employing different equip-

ment or the acquisition of new equipment from a different word processing vendor.

The word processing system is priced on a per disk basis. The single-unit price for one disk is \$45, with volume discounts available. Tigor said from 966 E. Sandhill Ave., Carson, Calif. 90746.

RS-232 Link Fits Genius Display

HASTINGS, Minn. — Micro Display Systems, Inc. has announced an RS-232 interface for its Genius full-page display.

The full-page display, 57 lines by 80 characters, allows the operator to perform word processing, financial modeling and software development tasks. The RS-232 interface functions at up to 19.2K bit/sec with all interface functions controlled by a Zilog, Inc. Z80 microprocessor. Internal memory of 16K bytes provides buffering and an internal screen memory, the vendor said.

The RS-232 version is 16-in. high, 13-in. wide and 17-in. deep and weighs 40 lb. It operates at 100/120V-60Hz or 220/240V-50 Hz, according to a spokesman.

The RS-232 version costs \$1,795. Micro Display Systems is located at 1310 Vermillion St., Hastings, Minn. 55033.

DP Acceptance Still Deterred

(Continued from Page 71)

vided by automation.

According to Hannagan, "I think that organizations [like 9 to 5] aren't antitechnology, they're anti-brute force. If you look at some of the implementation that has gone on, it's surprising that they're as civil as they are."

Naturally, rejection of automation comes with job displacement. "It's only beneficial to the worker if he has a job to be productive in," Shaiken pointed out.

Hannagan places the acceptance of technology on the shoulders of user and vendors alike. Automation will be accepted on the management level when it is used to solve business problems and not implemented or sold for automation's sake. For instance, some not-so-user-friendly electronic mail packages have met with high acceptance because they address a communication problem.

While technology still outstrips the user's ability to accept it, Hannagan said users will eventually become more comfortable with automation. One of the major reasons people will grow used to technology is its proliferation in such everyday products as automobiles and watches.

"You've got [Atari, Inc.] helping you out," Hannagan said.

Emulog-200 Anasazi, the world leader in supplying high-quality Data General compatible terminals, is offering the Emulog-200 with both local and pass through print capability—**FREE**. Also available as standard are the user friendly features of detached keyboard, green-phosphor monitor and monitor tilt.

Emulog-200 The Emulog-200 is plug-to-plug and code-to-code compatible with the D200 and 6053 video terminals. Delivery is remarkably quick—ten days ARO. And the price is right too! \$1250 list price, with significant volume discounts available.

Emulog-200 Before ordering another DG terminal, make the comparison. And we make it easy to obtain your first Emulog-200. Just call 602/275-0302 (collect) with your purchase order to receive a unit under our ten-day trial program. Discover the performance, benefits and value of the Emulog-200. Haven't you been without one long enough?

DG USERS Printer Port Free



Mail to:
International Anasazi, Inc.
2914 E. Katella Avenue
Suite 202
Orange, California 92667
or Call: 714/771-7250



Anasazi
Emulog Division

Name _____
Title _____ Company _____
Address _____
City _____ State _____ Zip _____
Telephone _____

☐ Please send me information.
☐ Have a sales representative call me.
☐ I would like a product demo.

European Sales Office: London House, 42 Upper Richmond Road West, London, SW14, England. 441 876 0102

HP 3000 Fixed Assets

Quality Software from Technalysis

Modern software for Asset Management designed for your HP-3000 business environment.

Compare price and performance, our on-line fixed asset system supports federal, state, book and one additional depreciation, all IRS depreciation methods, ACRS, and much more.

Call Technalysis today at
612 925-5900
we'll respond immediately.

Additional information available on all our easy-to-use HP-3000 Business packages.

- Fixed Assets
- Financial (Accounts Payable, Accounts Receivable, General Ledger, Payroll)
- Manufacturing/Distribution (Inventory Management, Order Processing, Purchasing/Receiving, Sales Analysis)

Our products are backed by 15 years of leadership in data processing software and services.

Technalysis Corporation
6700 France Avenue South
Minneapolis, Minnesota 55435
Telephone 612 925-5900



National Semi Acquires POS Terminal Maker

By Bill Laberis
CW Staff

MAYNARD, Mass. — National Semiconductor Corp. last week agreed to pay about \$50 million to acquire financially ailing Data Terminal Systems, Inc. (DTS) in a move designed in part to bolster National Semi's diversification efforts.

The acquisition, analysts say, also represents a great shot in the arm for National Semi's Systems Division, dedicated to the point-of-sale (POS) equipment for which DTS had become a mar-

ket favorite before its fortunes began to slide in 1980.

"It complements our business nicely," said Johnny Humphreys, National Semi's Systems Division manager, in a phone interview concerning the acquisition. "We feel we can manage them back to profitability."

DTS posted a \$200,000 profit on sales of \$26 million — its first profit in two years — in its last reporting quarter ending Oct. 31. The company had reported losses totaling \$9.5 million during the first nine months of 1982 and

has reduced its work force by 40% since 1980.

Humphreys said DTS was caught in a "declining spiral" marked by falling customer confidence compounded by a sluggish economy.

Humphreys declined to comment specifically on the roots of DTS' problems, noting, however, that "the company has had several management changeovers."

Kim Myher, industry analyst for International Data Corp., speculated DTS

(Continued on Page 76)

Federal Government Still No. 1 User: GSA

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The federal government, showing no sign of relinquishing its position as the largest computer user in the world, added almost \$270 million worth of mainframes and peripherals to its inventory during fiscal 1982, bringing the total dollar value of its equipment to slightly more than \$5.8 billion as of Sept. 30, 1982.

According to statistics compiled by the General Services Administration (GSA), the government owned or was leasing 335,498 pieces of DP equipment at the end of fiscal year 1982. That figure includes 18,474 CPUs configured into 13,058 DP systems, 4,587 of which were "general management" systems (comprising 7,066 mainframes), as opposed to "special management" systems, defined as those used for classified purposes, for process control on board ships and planes.

(Continued on Page 78)

Wang Promotes Top Managers

By Bill Laberis
CW Staff

LOWELL, Mass. — In a move that one observer said "signals a reorientation to the marketing side," Wang Laboratories, Inc. last week announced a series of promotions affecting top management.

John F. Cunningham, formerly executive vice-president, was promoted to presi-

dent and chief operating officer. Cunningham succeeds Dr. An Wang, company founder, as president. An Wang will remain as chairman of the board and chief executive officer.

Harry H.S. Chou, formerly executive vice-president, was promoted to vice-chairman of the board and will retain re-

(Continued on Page 80)

From 1980 to 1981, Study Says Software, Services Sales Fall 8%

Company	Compound Annual Growth	Avg. Profit Margin	Classification+
Comserv Corp.	54.7%	15.6%	SW
Auto-Trol Technology Corp.	41.2%	12.4%	TK
SEI Corp.	40.1%	15.6%	RAT
American Management Systems, Inc.	32.7%	6.3%	M
Applied Data Research, Inc.	32.6%	10.4%	SW
Computer Data Systems, Inc.	30.0%	7.3%	M
Electronic Data Systems, Corp.	29.0%	13.6%	M
Reynolds & Reynolds Co.	23.5%	41.2%	RAT
Automatic Data Processing, Inc.	23.3%	18.0%	B
Dataline, Inc.	19.0%	9.4%	B
Data Architects, Inc.	18.1%	9.7%	PS
Bradford National Corp.	11.5%	19.9%	RAT
Computer Usage Co.	5.5%	3.8%	RPS

IDC Chart

Four-year growth and average profitability of software and services vendors. (Key: SW, packaged software; B, batch; RAT, remote automated transaction; RPS, remote problem solving; TK, turnkey; PS, professional services; M, mixed).

By Paul Gillin
CW Staff

FRAMINGHAM, Mass. — Recession has struck the software and services segment of the computer industry, according

to the 1982 version of the biannual "Keys to Profitability in the Computer Software and Services Markets," published by International Data Corp. (IDC).

In a profitability overview of 53 companies in the software, processing and professional services fields, the study found that revenues of U.S. vendors surveyed increased 16% in 1981 over 1980 — an eight-point decline from the 24% increase achieved from 1979 to 1980.

The survey analyzed public companies with services and/or software revenues exceeding \$2 million and includes profitability data through Jan. 31. Companies that operate in other areas and do not break out software and service figures are

(Continued on Page 74)

No-Nonsense Traffic Cop

The Beall Channel Switch. Prevents computer traffic jams by directing critical on-line services to another CPU when failure occurs. Allows specific peripherals to serve more than one computer. Redrives all CPU signals to give you far more flexibility for physical placement of peripherals.

And Beall does all of this less expensively, more reliably and with less opportunity for operator confusion than anyone else.

We make five basic models to provide up to eight switchable interfaces each of which can be logically connected to as many as eight CPUs.

Want to summon more facts? They're in our new brochure. Write or call for it today.

John Beall & Company, Inc.

9103 Third Avenue • North Bergen, N.J. 07047 U.S.A. • 201/854-3562



Software and Services Sales Struck by Recession: Study

(Continued from Page 73)
not included.

The average profit margins of the 35 companies included in both the 1980 and 1982 versions of the study increased slightly from 11.2% to 12%. However, the averages were skewed by strong performances from large companies, the study said. Two-thirds of the vendors surveyed actually recorded a decrease in profit margins during that period.

The best profit margin performances were turned in by companies specializing in remote automated transaction and packaged software services, the study revealed. These companies recorded average margins of 17.9% and 16.2%, respectively. Batch service bureaus were also strong.

In breaking down profitability by company characteristics, the study found that high profits were reported by companies with revenues of greater than \$50 million; they averaged 13.6%. Companies that sell internationally reported an average 13.2% profitability, 3.5% higher than those that sell domestically. An average profitability of 18.4% was reported by firms that are growing at a rate of 15% to 30% per year. This figure is nearly four points higher than that of firms growing at an annual rate of more than 40%.

The worst profit margin performances were reported by companies offering mixed and professional services, the study noted. The steepest decline was for companies specializing in remote problem-solving services — from 13.8% profitability in 1980 to 9.8% in 1981.

Highest Profits

Companies turning in the highest profitability figures for the 1982 study include Reynolds & Reynolds Co. (32.1%); NCA Corp. (26.4%); Shared Medical Systems Corp. (25.3%); Software AG International, Inc. (24.6%); Quotron Systems, Inc. (23.9%); Cullinane Database Systems, Inc. (22%); and Bradford National Corp. (21.5%). Four of those offer

primarily remote automated transaction services.

The lowest profitability figures for established companies included Computer Network Corp. and Computer Usage Corp. (0% or a loss); American Management Systems (.2%); Mathematical Applications Group, Inc. (3.3%); Rand Information Systems,

Inc. (3.9%); and Keane, Inc. (4.0%).

IDC predicted a compound growth rate of 36% per year for utility and application software packages through 1986. Growth in processing services is slower.

The study costs \$595 from IDC at Five Speen St., Framingham, Mass. 01701.

Memorex Buys Into DMA

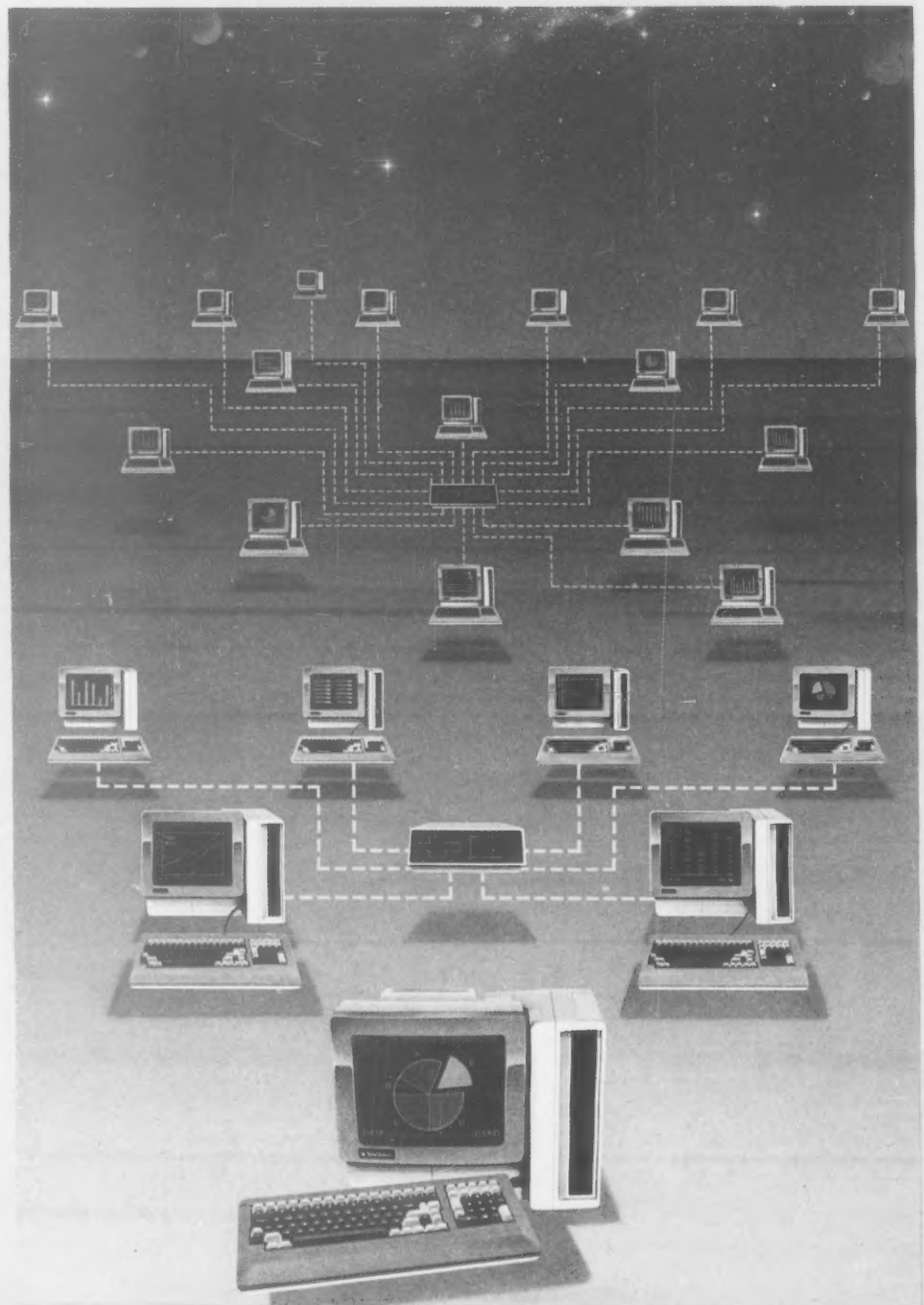
Memorex, a subsidiary of Burroughs Corp., has inked a joint sponsorship with DMA Systems Corp. under which Memorex will acquire a \$1.5 million minority interest in DMA. Both DMA and Memorex are developing several models of high-capacity, high-performance fixed disk drives.

The agreement, Memorex announced, reflects the complementary nature of the products of the two compa-

nies and their compatible strategies of providing fixed 5¼-in. disk drives of business system quality.

The companies will now jointly sponsor DMA's development of enhanced versions of both fixed and removable disk drives using a removable rigid disk cartridge.

Memorex announced it intends to market immediately the current DMA MicroMagnum product line.



MAGNETIC TAPE SYSTEM FOR IBM SYSTEM/34

Connect communications adapter to rear of Tape System, load S/34 Utility Program, and begin processing.

Transmit and receive data from any IBM bisynchronous device.

\$16,500
GENERAL SYSTEMS
CENTER, INC.
(516) 754-9140

Awarded \$11,000 in Counterclaim

DG Guilty of Fraud, Must Pay \$86,000 to OEM

By Jim Bartimo
CW Staff

CHICAGO — Data General Corp. was found guilty of fraud, deceptive trade practices and breach of warranty this month and was ordered to pay the heads of an OEM company \$86,000 in damages.

And in a breach of war-

ranty counterclaim against In-Flight Data Center, the U.S. District Court of Illinois here awarded DG \$11,000 for computer payments not made by the OEM.

According to briefs filed, In-Flight Data, the OEM, had ordered a DG CS-30 mini-computer in late 1979 to develop software intended for

sale with its turnkey packages.

CS-30 Offered

The then newly announced CS-30 was offered to authorized OEMs, which In-Flight Data had become in 1979, the legal complaint stated.

But problems arose for In-

Flight Data when the system, said by DG to be a multitasking machine, could only be used by one programmer at a time, the complaint stated. Further problems arose when In-Flight Data found that certain software commands were lacking and that software written on In-Flight's CS-30 would not run

on two of its customer's CS-30s, the complaint said. The customers each paid In-Flight for the machine, but not for the software.

Service Contract

According to the complaint, the plaintiffs and In-Flight owners, Mary Joan Wickham and William C. Wickham, said they signed a service contract with DG in 1980, but that DG never signed the agreement, even though the company cashed In-Flight's contract check. DG was unable to correct permanently the problems with the machine, the complaint stated.

In addition to compatibility problems with its customers' machines, In-Flight claimed it also experienced further problems with its own CS-30, used for programming. "[The] plaintiffs-computer had a defective disk drive frame," the complaint said.

"The drive is contained in a drawer that pulls out of the computer cabinet," the complaint continued. "The drive would work when the drawer was pulled out, but when the drawer was closed, it would go off the track. [Data General] advised the plaintiffs to operate the computer with the drawer open."

Heavy Damages

"As a result ... the plaintiffs suffered heavy damages [and] lost all of their customers and all of the time and money they had put into their business," the complaint stated. In-Flight Data's CS-30 was repossessed and resold.

Regarding the case, a DG spokesman said, "It is not our policy to comment on pending litigation. However, Data General is moving for a judgment notwithstanding the verdict and a new trial."

According to Marvin Benn, attorney for In-Flight, the court heard DG's plea recently and will act upon it within 30 days. At the same time, the plaintiff's moved to be compensated by DG for legal fees totalling \$30,000 to \$40,000, Benn said.

Of all the small business computers you can choose today, TeleVideo gives you more choices for tomorrow.

Any TeleVideo desktop computer can be used as a single-user, stand alone computer. Then, when you want to expand its professional performance capabilities, you have a choice of ways to grow into a multi-user system of up to sixteen TeleVideo computers. You can use our 8 or 16-bit computers, or any combination, starting with your original unit.

TeleVideo also gives you more choices of professional CP/M® software, including advanced graphics. And, thanks to TeleVideo's unique MmmOST™ executive program, the software used on your single-user computers will run on any TeleVideo multi-user system without modification. So if you want a small business computer that gives you professional performance,

it's obvious that you have a lot of choices for today.

But there's only one with choices for tomorrow. TeleVideo.

For more information, write TeleVideo Systems, Inc., 1170 Morse Ave., Sunnyvale, CA 94086, call toll-free 800-538-1780 (in California call 408-745-7760), call one of our authorized distributors or dealers, or contact one of our regional sales offices, listed below.

Northeast Region, 617-369-9370.
Eastern Region, 212-308-0705
Southeast Region, 404-447-1231
Midwest Region, 312-969-0112
South Central Region, 214-258-6776
Northwest Region, 408-745-7760
Southwest Region, 714-752-9488
European Sales (Holland), (31) 075-28-7461.

TeleVideo Systems are fully serviced nationwide by TRW

 **TeleVideo Systems, Inc.**

CP/M is a registered trademark of Digital Research, Inc.

MmmOST is a trademark of TeleVideo Systems, Inc.

VAX - 11

ON-SITE COURSES

- TIMESHARE USER
- FORTRAN PROGRAMMER

Call toll-free for detailed course outlines. The cost is \$3200 per week.

Mini & Micro Edu. Services
(800) 824-7888 ext. M4573
(800) 852-7777 ext. M4573

Plessey, Scientific-Atlanta Enter Joint Venture

By Robert Batt

CW West Coast Bureau
LONDON — Plessey Co., a major British electronics manufacturer, and Scientific-Atlanta, Inc., have agreed on a joint venture for exploiting the rapidly growing international markets in telecommunications and satellites.

In a series of agreements announced by both companies, a joint venture compa-

ny, Plessey Scientific-Atlanta Ltd., will be set up to exploit developing business opportunities for satellite markets in Western Europe.

Technical Assistance

In addition, Plessey plans to buy up to 30% of the U.S. company's common stock, while giving Scientific Atlanta technical assistance in the design and application of

components, devices and products, according to the announcements.

The new joint venture, which will be owned 51% by Plessey and 49% by Scientific-Atlanta, also plans to develop new communications products including products for use in switched "star" coaxial cable or optical fiber communications systems. Scientific Atlanta will have

an exclusive license to manufacture and sell products developed by the new company.

The two companies will have complementary strengths, according to the electronics manufacturers, with Scientific-Atlanta specializing in satellite ground station equipment, while Plessey is known for its expertise in digital telecom-

munications systems, fiber-optic transmission and network design.

Under a separate agreement, Scientific-Atlanta will have access to Plessey's research, development and manufacturing of customized, very large-scale integrated chips for use in its own products, the two electronics manufacturers reported.

Chip Maker To Buy DTS

(Continued from Page 73)

was having an increasingly difficult time keeping up with the POS industry leaders, such as NCR Corp. and IBM.

To the company's credit, Myher said DTS has a well-established nationwide distribution system, one that will give National Semi "strong access to several POS market segments."

It was the reported quest by Olivetti Corp. for a broad-based U.S. distribution network that led some industry observers recently to speculate that Olivetti, not National Semi, was DTS' suitor-in-waiting. Olivetti had bought 12% of DTS in 1981.

Myher also said that the acquisition, coupled with Datachecker, National Semi's major POS offering, will give the company "blanket [POS] market coverage."

The acquisition could also allow National Semi to utilize the overall systems offerings of its subsidiary, National Advanced Systems, Inc., to market a broader range of IBM-compatible, complete POS systems, from terminals to CPUs and storage subsystems, one analyst noted.

The acquisition agreement, unanimously approved by the boards of both companies, provides for a two-step transaction, according to a statement released jointly by the two companies.

First Step

The first step will be a cash tender offer of \$8 per share for about \$4.3 million shares of DTS, about two-thirds of the outstanding issues.

This tender offer is contingent upon, among other things, a minimum of 2.7 million shares being tendered and not withdrawn.

After the tender offer, the second step will be a cash merger transaction in which all shares not acquired by National Semi will be converted into the right to receive \$7.25 per share in cash.

Distributed for the Inform

Comshare's System W makes your Information Center more effective because:

1. It sets a new standard for multi-dimensional modeling and reporting.
2. It is more powerful and at the same time easier to learn than previous systems.
3. It is available on both IBM mainframes and IBM Personal Computers with integrated communications and total syntax compatibility.
4. It has an automated computer-assisted training course using micro-controlled video for maximum student interest.

This unique combination of features allows the Information Center user to solve a broader range of business needs, from simple two-dimension problems to enormous nine-dimension models. System W conserves mainframe resources by allowing model development on micros and compatible production processing on mainframes.

Read what the experts' say about System W:

"System W is a powerful and sophisticated tool which extends the decision-making capability to the end user while requiring minimal technical expertise."

"The software permits definition of models which adequately represent the user's perception of his problem environment."

"Perhaps the most outstanding feature of System W is the ability to utilize its full complement of features for all dimensions of large, multi-dimensional models."

"R and P believes that System W's functionality reflects the most recent thinking in DSS design."

* "Competitive Product Analysis of Decision Support Systems" Research & Planning Inc., Cambridge, Mass.

SYSTEM W

Decision Support System

Commodore to Use Z8000 Family in Its Micros

CAMPBELL, Calif. — Zilog, Inc., a subsidiary of Exxon Corp., and Commodore International Ltd. have signed a definitive agreement under which Commodore will use Zilog's 16-bit Z8000 family of microprocessors for its next generation of microcomputer systems. Commodore had previously used processor chips of its own design and manufacture

exclusively.

According to the agreement, Commodore will be licensed by Zilog to manufacture the Z8000 and related peripheral support circuits for use in its microcomputers. Zilog in return will receive from Commodore mask sets and manufacturing rights to selected custom circuits used in current and future Commodore products.

For users, the agreement could mean that Commodore will be among the first vendors to introduce low-cost 16-bit micros to the marketplace. According to Francis deWeeger, Zilog president, the agreement represents "an important step forward in the 16-bit microprocessor race. Previous 16-bit selections have been [designed] for relatively high-priced

professional and business systems with moderate production runs."

Zilog had previously marketed its Z8000 for use in one other microcomputer, a high-end model from Olivetti Corp. Commodore's use of the chip will be its first appearance in the low-end market. Most 16-bit personal computers make use of either the 8086/8088 microproces-

sor from Intel Corp., such as the IBM Personal Computer, or the MC68000 manufactured by Motorola, Inc.

Large-scale integration circuitry for Commodore's computers now will be manufactured in part at Zilog's facilities, freeing up space for Commodore to more vigorously pursue its semiconductor manufacture. Commodore had previously announced a semiconductor manufacture expansion plan, which will double the company's chip capacity.

Modeling mation Center

Read what users say about new System W:

BELOIT **Mainframes and micros**
Programmer-Systems Analyst

"Having multiple delivery methods available was a key factor in our decision. The micro software was ideal for distributing models plus capturing data, and mainframe modeling capability means we tackle the full range of analysis problems."



Certified Public Accountants

Multi-dimensional, non-procedural
Senior Consultant

"System W's powerful ability to manipulate multi-dimensional data is remarkable! It can do consolidations, allocations, "what if" and sensitivity analysis across many dimensions. The product is intelligent and automatically knows how to do calculations in the right sequence. Plus, the formatting flexibility of System W's report writer is light years ahead of anything I've ever seen."

Combined
Network, Inc.

Easy to use, understand
Network Analyst

"System W lets me express rules in straightforward English that can be understood by anyone who looks at the model's logic. With the system I used before W, I often had to consult a skilled programmer to make changes to the model. But with System W, I've been able to do everything myself — with minimal training."



Ford Aerospace

Improves productivity
Programmer Analyst

"It takes half the time to develop a model in System W because it requires you to do so much less logic and report writing than other languages. I was amazed that I was able to do one report specification with just twelve lines of rules. In another language the same report took several pages of code. System W's English language nature makes it so much easier to use that it's inherently faster."



Unequalled support

Senior Financial Analyst

"Comshare's response to my needs is always immediate. Their account people understand my applications and provide valuable help in solving difficult financial modeling problems."



LAWRYS FOODS INC.

Modeling simplicity

Marketing Research Supervisor

"System W is very flexible and powerful. Large data files are handled efficiently and may be easily manipulated. The diverse capabilities of System W not only enable it to consolidate upward, but also handle the reverse problem of allocating downward."

For information, call Shary Price at (313) 994-4800, Ext. 478.

Or write COMSHARE, Decision Support Systems Marketing, P.O. Box 1588, Ann Arbor, MI 48106.



COMSHARE

Advancing the Art of Decision Making

Study Looks At Supermini

WELLESLEY, Mass. — Shipments of superminicomputers will grow at a compounded annual rate of 31.9% through 1986, reaching total sales of \$4.8 billion by that time, according to a report by Venture Development Corp.

"The Superminicomputer Industry 1981-1986: A Strategic Analysis" claims this rapid growth will be stimulated by the entry of "many new vendors" into the supermini market. The report says "any minicomputer or microcomputer vendor is a potential supermini competitor."

The report states that the six existing vendors of 32-bit superminis will expand their product offerings up and down the performance spectrum, and that expansion will be accompanied by rapidly falling hardware prices.

The new supermini introductions may incorporate 32-bit microprocessors and "will prove quite popular, from laboratory instrumentation and data acquisition application to small business computers," the report said.

"The Superminicomputer Industry 1981-1986" is priced at \$2,490 from Venture Development Corp., 1 Washington St., Wellesley, Mass. 02181.

FAI to Open Plant in U.S.

NEW YORK — Fujitsu America, Inc. (FAI) will establish a U.S. manufacturing plant to produce optical fiber communications systems, according to Rinzo Iwai, company president.

FAI, a wholly owned subsidiary of Fujitsu Ltd. of Japan, said it will locate the plant in the so-called Sun Belt region of the Southwest.

Currently FAI has two other U.S.-based production facilities, American Telecom, Inc. and Fujitsu Microelectronics, Inc.

U.S. Gained \$270 Million Worth of CPUs in '82

(Continued from Page 73)

Continuing a trend toward increased use of small computers, the government added 683 machines (from 12,000 CPUs to 12,683) costing less than \$50,000 during fiscal year 1982, 268 CPUs (from 3,797 to 4,065) costing between \$50,000 and \$200,000 and only added 20 mainframes with price tags exceeding \$200,000 (1,706 to 1,726) to the 17,503 CPUs in the inventory at the end of fiscal year 1981.

Of the 18,474 federal CPUs, 16,768 were owned and 1,707 leased. Of the 14,940 new DP systems components acquired during the last fiscal year, 7,438 were bought for \$117 million and 7,502 (valued at \$148 million) were leased. Some 530 of the new federal mainframes were purchased for \$53 million and 143 (valued at \$49 million) were leased. Demonstrating a continued problem with aging systems, 2,065 of the machines were older than 12 years at the end of last September.

As in the previous year, Digital Equipment Corp. had delivered the largest number of CPUs to federal agencies, accounting for 26.7% (4,924 machines) of the overall CPU total. IBM, which controlled more than 42% of the federal market in 1965, saw its share continue to drop, from 8.2% to 7.4%, although the firm maintained the lead in dollar value of total federal components, \$1.337 billion. In general, there were no

Manufacturer	Total Number of Components	Value of Components (Millions)	Number of CPUs	Total Percent of CPUs (Fiscal Year 1982)	Total Percent of CPUs (Fiscal Year 1981)	Value of CPUs (Millions)	Number of I/O Devices	Value of I/O Devices (Millions)	Number of Storage Units	Value of Storage Units	Number of Communications Terminals	Value of Communications Terminals (Millions)
Control Data Corp.	28,897	713	428	2.3	2.5	355	5,442	88	6,379	225	9,513	32
Data General Corp.	4,968	59	1,292	7.0	7.1	39	1,555	5.4	1,265	11	508	2
Digital Equipment Corp.	26,809	386	4,924	26.7	26.2	233	7,000	36	8,052	90	5,134	22
Honeywell, Inc.	34,570	639	1,083	5.9	5.2	240	6,413	97	7,181	218	18,361	60
Hewlett-Packard Co.	11,629	102	1,740	9.4	8.7	47	4,191	17	1,844	17	2,932	15
IBM	53,746	1,337	1,367	7.4	8.2	513	10,341	276	7,406	364	5,224	64
Modular Computer Systems, Inc.	2,829	80	840	4.5	5.5	65	809	3.6	873	9	170	1
Perkin-Elmer Corp.	2,175	35	411	2.2	2.2	27	427	1.4	742	6	520	2
Sperry Univac	25,943	681	1,626	8.8	9.6	224	6,866	98.4	6,864	269	6,130	56
Wang Laboratories, Inc.	4,642	54	476	2.2	2.2	9	2,044	29.1	746	8	881	9
Other	144,290	1,723	4,287	23.2	22.5	406	38,244	314	23,297	551	62,583	279
Totals	335,427	5,809	18,474	100	100	2,158	83,328	965.9	64,649	1,768	111,956	543

Federal DP Inventory as of Sept. 30, 1982

GSA Chart

drastic swings in the statistics for individual suppliers of mainframes; Hewlett-Packard Co. climbed from 8.7% to 9.4%, Sperry Univac dropped from 9.6% to 8.8% and the rest maintained their representation, at least in terms of numbers of CPUs.

In terms of end users, the Department of Defense remained the primary computer user in the government, accounting for 5,589 systems, comprised of 7,519 mainframes. Individual figures here at the end of fiscal year 1982 were: Air Force, 1,966 systems (2,906 CPUs); Navy, 1,799 systems (2,270 CPUs); and Army, 1,554 systems (1,899 CPUs).

Major civilian agency computer users included: Energy Department, 3,450 systems (4,530 CPUs); Veterans

Administration, 652 systems (731 CPUs); and the Commerce Department, 464 systems (444 CPUs).

ACT Sells Services Subsidiary

NEW YORK — Advanced Computer Techniques Corp. (ACT) has sold its former subsidiary, ACT Computer Services, Ltd., to a company formed by a group of ACT, Ltd. employees in Canada for \$4.5 million. The company said \$1 million will be paid in cash, with the remainder paid as fees for services and licenses over a four-year period.

The divestiture fulfills ACT's com-

mitment to the Canadian government's Foreign Investment Review Agency, which required the sale of at least 60% of the equity of ACT, Ltd. to Canadian investors. The firm also said the divestiture is a continuation of company efforts to move to serving specific vertical markets.

ACT Corp. is headquartered at 437 Madison Ave., New York, N.Y. 10022.

Check out the performance. Take a TIS test drive.



The unveiling of TIS signaled a new era in advanced, integrated data base and application software technology.

TIS. Complete. Innovative. Nine powerful components architected into one high performance information system for the entire corporation. Sophisticated software technology for the Development Center. Easy-to-use tools for the Information Center.

TIS. Data processing managers are eager to test its performance, feel its power. One by one, they are taking the TIS test drive—a hands-on demonstration of TIS in use.

Today, many companies have captured the excitement of TIS. TIS is meeting their complete range of information needs, reducing backlogs, improving processing efficiency, increasing user satisfaction. All built on a solid foundation of data base technology.

TIS can put your company on the road to greater productivity—and profits. For your TIS test drive, or for more information, return the coupon at right. Or contact our Marketing Services Department.

800-543-3010 (In Ohio: 513-661-6000.
In Canada: 416-279-4220.)

I'm eager to

- ☐ Receive Cincom's comprehensive full-color TIS Brochure
☐ Arrange a TIS test drive.

Name _____
Title _____
Company _____
Address _____
City, State, Zip _____
Computer _____

 **Cincom Systems**

Cincom Systems, 2300 Montana Avenue, Cincinnati, Ohio 45211

Detach here, moisten and seal envelope securely before mailing.

Fold and insert order form (attached through binding) and remittance here.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 709 FRAMINGHAM, MA 01701

postage will be paid by

CIRCULATION DEPARTMENT



COMPUTERWORLD

**375 Cochituate Road, Rte. 30
Box 897
Framingham, MA 01701-9985**



To Consolidate Activities

HP Establishes Personal Computer Group

PALO ALTO, Calif. — In a move designed to consolidate personal computer activities, Hewlett-Packard Co. has formed the Personal Computer Group, responsible for all personal computer and workstation-related manufacturing. The new group consists of the company's former Personal Computer and Computer Terminals groups.

Cyril J. Yansouni, former general manager of the Ter-

minals Group, has been tapped to head the Personal Computer Group, which will be based in Sunnyvale, Calif. Meanwhile, C. Richard Moore, former general manager of the Personal Computation Group, will be assigned to define a broad strategy for HP products aimed at the engineering productivity marketplace, the company announced.

Included under the aegis of the new group are HP's

Series 100 personal office computers, Series 80 personal computers for business and engineering use, Series 70 portable computers, Series

40 hand-held computers and Series 10 programmable calculators, as well as peripherals associated with these products.

Sales of personal computers and peripherals for HP in 1982 totaled about \$500 million of the company's \$4.25 billion in gross revenues.

Nickels & Dimes

Distribution Management Systems, Inc., Lexington, Mass., has received \$2.2 million in financing from a group of investors including

The Palmer Organization L.P.; Fidelity Ventures, Ltd.; Funds for Industry, U.K.; Rhode Island Hospital Trust Capital Corp.; New England Capital Corp.; Massachusetts Institute of Technology; and Investors Associates.

Micro Peripherals, Inc. has obtained a \$15 million line of credit from Union Bank, a subsidiary of Standard Chartered Bank Group, London.

Eagle Computer, Inc., San Jose, Calif., has received a \$5 million line of credit from the Bank of America.

Mountain Computer, Inc. has received a total of \$500,000 in funding from San Jose Capital Corp. and PCF Venture Capital Corp., Burlingame, Calif.

Amnet, Inc. has received a total of \$3.4 million in venture capital funding. Investors include Hambrecht & Quist, San Francisco; The Palmer Corp., Boston; Citicorp Venture Capital Ltd., New York; Alex. Brown & Sons, Baltimore; Scientific Advances, Columbus, Ohio; and Canadian Enterprises Development Corp., Ltd., Toronto.

Prime Signs Joint Marketing Pacts With ISI, Henco, Real Decisions

NATICK, Mass. — Prime Computer, Inc. has extended its third-party applications software offerings with three joint marketing agreements relating to key software packages for payroll/personnel, text management/docu-

ment retrieval and decision support, which will now be available to the company's customers and prospects.

Integral Systems, Inc. (ISI) of Walnut Creek, Calif., will now offer Prime users on-line, real-time updates to an

integrated data base with its payroll/personnel system. ISI's system reportedly handles a range of human resource management functions in a variety of modules and options ranging in price from \$35,000 to \$100,000.

Henco Software, Inc. of Waltham, Mass., will make available to Prime users its text management/document retrieval system, said to extend the capabilities of the company's relational data base management product to the organization and retrieval of unlimited-length text. Info-Text is priced at about \$20,000.

Real Decisions Corp. of Stamford, Conn., will make available its Dart modularized data access and reporting system for in-house processing of Standard & Poor's Compustat data bases. Dart is said to access bank, utility, telecommunications and business information files contained in Compustat and is priced at \$15,000 for the entry-level module.

Prime also announced its first joint marketing agreement for the DCS-2 system of Teltone Corp., said to enable simultaneous voice and data communications to be transmitted over existing phone lines in local-area networks. Under the joint agreement, Prime sales representatives will introduce a jointly marketed product to company customers, with the companion marketer responsible for the direct sale and support of its product.

In another announcement, Prime said it has formed a separate profit center responsible for computer-aided design and manufacturing (CAD/CAM) products. John K. Buckner, vice-president of Prime, was appointed president of the CAD/CAM Business Group, which will direct the company's worldwide business in scientific, engineering and manufacturing concerns.

CICS COURSES

for

• MANAGERS • ANALYSTS • PROGRAMMERS

Courses begin March, 1983 in Washington, D.C. area
call or write

TECHNICAL MANAGEMENT SERVICES, INC.
105 N. Virginia Ave., Falls Church, Va. (703) 241-1777

CICS PRINT FACILITY CPF

Do your CICS based printers or your batch report distribution keep you tied up in knots? Or, have you thought that RJE would keep all of your dollars tied up?

CPF can loosen the noose! CPF is a report spooling program that allows complete control of online printers in CICS with reports created online or from JES 2 or JES 3.

Our users have converted from other spooling packages to CPF because of the ease of operation, installation, and modification. [We are able to add printers or terminals in minutes.]

CPF FEATURES:

- | | |
|-----------------------------|---------------------------------------|
| 1. Complete printer control | 7. Help Screens available |
| 2. Index with report status | 8. Multiple destination printing |
| 3. User friendly operation | 9. Complete report review on terminal |
| 4. Message sending | 10. Multiple copy printing |
| 5. 3270 Screen Copy | 11. Built in report security |
| 6. Menu driven | |

And more!

For a free 30-day trial or more information write or call:

Software Technology, Inc.
P.O. Box 1110, Poulsbo, WA 98370
(206) 598-4400

VAX/VMS RESOURCE MANAGEMENT and CHARGEBACK SYSTEM

DP Managers use ARSAP for:

- User and Project Accounting
- Monitoring Usage and Trends
- Controlling Performance
- Billing for Services

Also Available for RSTS and RSX Systems

GEJAC
INCORPORATED

P.O. Box 188
Riverdale, MD 20737

PHONE:
(301) 864-3700

BUILDING A COMPUTER CENTER?

If you're planning a new expanded or remodeled DP facility, you need Datasphere's help.

Since 1968 Datasphere's unique combination of products and services has saved dollars, frustration and time for large and small firms around the world.

From turnkey—design build packages to the smallest support equipment, we'll do all or part—without schedule or cost surprises! Because Datasphere is unique—we're engineers, builders, manufacturers and architectural planners.

Our complete line of equipment includes:

- | | |
|------------------------------------|----------------------|
| • Uninterruptible Power Systems | • Elevated Flooring |
| • Computer Power Centers | • Custom Consoles |
| • Computer Fire Protection Systems | • Security Systems |
| • Computer Type Air Conditioning | • Systems Monitors |
| • Gas Turbines/Diesel Generators | • Voltage Regulators |
| • Line Filters | |

CALL DATASPHERE NOW!

800-221-0575

IN NEW JERSEY CALL 201-272-1810

Write for additional information

datasphere, Inc. 49 Meeker Avenue, Cranford, N.J. 07016

Mergers and Acquisitions

Utility Marketing and Development, Inc., Tampa, Fla., has reached agreement with **United Technologies-Lexar Corp.** to acquire Lexar's

(formerly Stromberg-Carlson's) Crossreed private branch switching equipment product lines and its associated support services.

Scientific-Atlanta, Inc., Atlanta, has completed its acquisition of the assets and business of **Digital Video Systems, Inc.**, Toronto, Canada.

MSI Data Corp., Costa Mesa, Calif., for approximately \$100 million through the exchange of a nine-tenths share of Sensormatic common stock for each common share of MSI.

Cunningham Promoted To President at Wang Labs

(Continued from Page 73)

sponsibilities as chief financial officer and treasurer; and Frederick A. Wang, Dr. Wang's son and formerly senior vice-president, was promoted to executive vice-president and chief development officer. Cunningham, Frederick Wang and Chou will each report directly to Dr. Wang.

In addition, company directors promoted Jon F. Kropper from senior vice-president to executive vice-president of manufacturing. Kropper will report directly to Cunningham.

Despite Cunningham's elevation to president, Frederick Wang is not now the dark horse in the race to succeed his father as chief executive officer, analysts said. Rather, the promotions may have the effect of delaying, for the time being anyway, any corporate wrangling over who might eventually succeed Dr. Wang as head of the rapidly growing office systems maker.

Since Wang's annual revenues cracked the \$1 billion mark last year, there has been increasing speculation that Dr. Wang would yield large chunks of his de facto authority to his hand-picked management team. Some observers speculate that perhaps no one will ever wield the power Dr. Wang now holds and that the company might eventually divide that power up "to bend to the will of Wang's top people to keep them on board," one analyst said.

George Colony, an analyst with The Yankee Group, said Cunningham's appointment as president coincides with company efforts to vault itself into the '80s via a powerful marketing effort as an office automation and small systems leader "and not as a second-rate company." Cunningham's strategic planning expertise will be needed to help the company match "the very powerful sales forces of the IBM's and [Digital Equipment Corp.'s] and [Hewlett-Packard Co.'s]," Colony said.

Ascendancy Not Assured

"Fred Wang's ascendancy is going to be delayed, but is not assured," Colony said. As Wang has long been a development and innovation-oriented company, Frederick Wang's performance as chief development officer will determine whether he actually succeeds his father, Colony added.

"Fred is far from out of this race," Colony remarked. "In the meantime, it is very important that Dr. Wang stay on to keep the company's inertia going into what will be a very important transition period in 1983. Now he [Dr. Wang] will see who can cut the mustard."

David Terrie, office automation analyst with International Data Corp., said, "It seems with these promotions that the company's just playing it cagey, splitting up the power

along lines already defined. Fred [Wang] will remain the head of product development and technology and Cunningham will continue in strategic corporate planning. It doesn't sound as though anyone's ambition has been derailed."

Either Cunningham or Wang is expected to succeed Dr. Wang.

Avnet, Inc., New York, has acquired **Inter Circuits, Inc.** of Stockton, Calif., for \$6.5 million, payable in Avnet common shares.

Honeywell, Inc. and **Finnegan Corp.** have completed a transaction whereby Honeywell has purchased **Disc Instruments, Inc.**, maker of optical encoders used in computer peripherals and factory automation equipment.

Sensormatic Electronics Corp., Deerfield Beach, Fla., will acquire

Prime Computer, Inc. will acquire **Compeda, Ltd.**, a British developer and distributor of computer-aided design and manufacturing software, for an undisclosed amount of cash.

International Telephone and Telegraph Corp. has completed the acquisition of **Dialcom International, Inc.**, Silver Springs, Md., with Dialcom becoming a member of ITT's Communications Operations and Information Services Group. Terms of the agreement were not disclosed.



Hardware Makers Form NS16000 Users Group

By Jeffrey Beeler

CW West Coast Bureau

SAN JOSE, Calif. — Among buyers of microprocessors and other semiconductor components, users groups have been virtually unheard of — at the least, highly unusual.

Now the situation may begin to change. Last month, representatives of 17 hardware manufacturers gathered here for the first ad hoc meeting of an emerging users group whose main focal point is the National Semiconductor Corp. NS16000 microprocessor.

The group boasts the distinction of being perhaps the first collection of hardware buyers to devote itself exclusively to a semiconductor part as opposed to a system-level product,

according to Tom Linden, the organization's president pro tem.

Unlike most other such groups, the NS16000 organization consists mostly of vendors that buy raw microprocessors from National Semi, build the devices into their own products and then sell the finished goods on the open market. The group's membership includes no computing professionals or other end users, in sharp contrast to more familiar customer associations like IBM's Guide and Share.

Still in its embryonic stages, the group owes its existence mainly to Linden, who serves as president of an Allston, Mass.-based compiler and software company known as Translation Systems, Inc.

Linden, who spearheaded the group's formation, sees the organization as an effective means of dispelling what he feels is widespread misinformation about the NS16000. Many of the part's users and prospective users are laboring under the mistaken impression that the NS16000 fails to work as it was intended, he said.

Users are also widely misinformed about the microprocessor's delivery dates, the nature of its functions and its methods of operation, he said, a fact Linden partly attributes to National Semi's purported failure to market the product effectively.

"With any new part like the NS16000, there's always a genuine need for a free exchange of informa-

tion among technical users," Linden said.

Another of the users group's primary purposes is to apply pressure on National Semi to adopt product, marketing and support plans favorable to the membership's interests.

Linden also expects the group to form a technical advisory committee that will aim to influence the semiconductor vendor's ongoing NS16000 development efforts and to suggest possible ways of improving the component's performance.

Executive Corner

- Vaemon H. Crane has been appointed president and chief operating officer for Computer Consoles, Inc. Herman A. Affel Jr. was named chairman of the board and chief executive officer for the firm.

- Gerald W. Fleming has resigned as Microdata Corp.'s senior vice-president for marketing, sales and service to become president and chief operating officer at Rexon Business Machines Corp. Ben C. Wang will continue as chairman of the board and chief executive officer at Rexon. Wang is also president of the newly formed Rexon subsidiary, Wangco.

- Deanna Driscoll has been elected vice-president of software development at Unidata Systems, Inc.

- Channing H. Russell has been appointed divisional vice-president, Computer Systems Division, at Bolt Beranek and Newman, Inc.

- Frank Faggiano has been promoted to vice-president of human services at Prime Computer, Inc.

- Joseph C. Ciasullo has been elected executive vice-president, international operations, at Datapoint Corp.

- Wayne Sharkey has been appointed corporate vice-president, sales and marketing, at Semtronics Corp.

- David M. Turpin has been named vice-president of manufacturing at Dialogic Systems Corp.

GREAT SOFTWARE ISN'T WRITTEN. IT'S ENGINEERED.

Software engineering means hardnosed quality control. It means extensible architecture. It means strict specifications for reliability and durability.

Each provided through intensive research, a disciplined development process and a commitment to excellence.

ENGINEERING FOR THE INFORMATION CENTER.

If backlog is jamming your responsiveness to end-users and you want a strategic, dependable solution you can build upon, you need advanced technology software engineering. And that's what you'll get from Informatics® Answer® Series software products. The Answer Series satisfies just about every information need your end-user can come up with. "Do-it-yourself" tools for them. Control for you.

ENGINEERING FOR THE APPLICATION DEVELOPMENT CENTER.

Don't compromise your mainstream applications with short term approaches. Longevity, efficiency and reliability are crucial. Engineered software is even more important here. Informatics Mark® Series application generators make your data processing efforts more effective. They increase application programming productivity from two to five times above current levels. Your entire staff can reach new levels of productivity.

It takes the resources of a company like Informatics to meet the information challenges of the 80s. We will continue to be a dominant force in leading edge IBM installations throughout the world. After all, we've been decreasing backlog, increasing productivity, and engineering great software for over 20 years.

Informatics General Corporation®, Software Products Group, 21050 Vanowen St., Canoga Park, CA 91304, (213) 716-1616.

THE SOFTWARE ENGINEERS

 **informatics**
general corporation

VOLUME DATA ENTRY SERVICES



Call Our TOLL-FREE
HOTLINE
For Instant Quotes
800-228-9410

FOR OVER 14 YEARS

**AMERICAN
KEY DATA**

5314 S. 99th ST. • OMAHA, NE 68127

position announcements

position announcements

position announcements

position announcements

position announcements

POSITION ANNOUNCEMENTS



YOUR COMPUTER CAREER IS TOO PRECIOUS TO WASTE.

Regardless of your age you don't have an endless amount of time to reach your ultimate career objectives. Indeed, you should want to achieve this goal as soon as possible. Every move you make should be a deliberate, calculated step along a carefully planned career path. In the process, to be really effective, you'll require skilled professional help.

At NCA we're not interested in merely finding you a new position (lots of firms can do that). We want to help you to plan for and achieve realistic career development. What is more, we have the exceptional opportunities, the close contacts (locally and nationally) and the representational skills to do exactly that.

Come in. Call. Or mail your resume to the NCA firm nearest to you. Confidentiality is assured. Company clients assume our fees. Now, we urge you to use the services of NCA... the people who understand that a computer career is too precious to waste.

ATLANTA: BAI Limited
229 Peachtree Street, Suite 1601-C
Atlanta, Georgia 30303 (404) 581-0040

BOSTON: Robert Klevan and Co., Inc.
North Brook Park, Suite One, 181 Bedford Street
Lexington, Massachusetts 02173 (617) 861-1020

CHICAGO: Thos. Hirtz & Associates
150 N. Wacker Drive, Suite 1700
Chicago, Illinois 60606 (312) 977-1555

CLEVELAND: Professional Staffing Systems, Inc.
4807 Rockside Road, Suite 300
Cleveland, Ohio 44131 (216) 524-5500

COLUMBUS: Michael Thomas, Inc.
65 E. Wilson Bridge Road, Suite 201
Worthington, Ohio 43085 (614) 846-0926

DALLAS: DataPro Personnel Consultants
12720 Hillcrest, Suite 520
Dallas, Texas 75230 (214) 661-8600

DENVER: EDP Infinity, Inc.
P.O. Box 2468
Littleton, Colorado 80161 (303) 850-5490

DETROIT: Electronic Systems Personnel, Inc.
3000 Town Center, Suite 2580
Southfield, Michigan 48075 (313) 353-5580

FLORIDA: Data Sciences Personnel, Inc.
P.O. Box 8577
Hollywood, Florida 33024 (305) 434-6112

HARTFORD: Compass, Inc.
900 Asylum Avenue
Hartford, Connecticut 06105 (203) 549-4240

HOUSTON: Career Consultants, Inc.
2000 South Post Oak
Houston, Texas 77056 (713) 626-4100

INDIANAPOLIS: Computer Personnel Services, Inc.
107 N. Pennsylvania
Indianapolis, Indiana 46204 (317) 634-4712

MILWAUKEE: EDP Consultants, Inc.
11430 W. Bluemound Road
Milwaukee, Wisconsin 53226 (414) 475-0077

MINNEAPOLIS: Electronic Systems Personnel
858 Twin City Federal Tower, 121 S. 8th St.
Minneapolis, Minnesota 55402 (612) 338-6714

NEW JERSEY: Systems Search
90 Millburn Avenue
Millburn, New Jersey 07041 (201) 761-4400

NEW YORK: Boral Associates, Inc.
7 Dey Street, Suite 410
New York, New York 10007 (212) 227-7370

NEW YORK UPSTATE:
CFA Associates Personnel, Inc.
2530 James Street
Syracuse, New York 13206 (315) 463-5225

NORTH CAROLINA: DataMasters,
Div. of TaskForce, Inc., P.O. Box 6888
Greensboro, North Carolina 27405
(919) 373-1461

PHILADELPHIA: Systems Personnel, Inc.
115 West State Street
Media, Pennsylvania 19063 (215) 565-8880

PHOENIX: Professional Career Consultants
4628 North 17th Street, Suite H101
Phoenix, Arizona 85016 (602) 274-6666

SAN DIEGO: Electronic Systems Personnel Agency
2607 First Avenue
San Diego, California 92103 (619) 239-0811

SAN FRANCISCO: The Computer Resources Group,
Inc. Agency, 303 Sacramento Street
San Francisco, California 94111 (415) 396-3535

SEATTLE: Houser, Martin, Morris & Associates
1940 116th Avenue N.E.
Bellevue, Washington 98004 (206) 453-2700

WASHINGTON D.C.: ESP Systems Corporation
914 Lambertson Drive
Silver Spring, Maryland 20902 (301) 649-6171



National Computer Associates

Programmer Analysts Real Career Growth Can Be Yours - At Red Lobster!

It's not just another slogan. Red Lobster is currently opening over 35 restaurants each year, and our Information Systems group is growing even faster. The fact is, we increased our size FOUR FOLD in the past year. This has a direct effect on our employees, because we promote from within. We also have clearly defined career paths that allow you to choose where you want to be in the years to come.

This growth also explains our conversion from VM OS/VSI to a MVS operating environment and our dual IBM 4341 Group Two's (with 8 mg each). This growth has also created a formal environment complete with standards, disaster recovery plans, and quality assurance.

The successful candidate will be self-motivated, have excellent interpersonal skills and exposure to systems design and project leadership. Extensive experience in COBOL programming, and OS/MVS is required. Program development experience using CMS is desirable.

The extras we offer include nationally competitive salaries, and a benefits plan that includes profit sharing and retirement. If you qualify send your resume to:



Red Lobster
Dept. DJP/CW
P.O. Box 13330
Orlando, Florida 32859

An Equal Opportunity Affirmative
Action Employer M/F/H/V

Computer Sales Division MANAGER

Pearl Computer Division needs experienced Sales Management person with thorough knowledge of product (IBM Systems 34 & 38), brokering business, full knowledge of handling leasing contracts on equipment sold, and ambition to assist in planning growth into major corporate department with broader business computer sales possibilities. Person we seek will have demonstrated sales and management experience and ability to visualize expanded personal role and corporate vehicle within which to achieve this growth.

Excellent sales incentive package including guaranteed salary, profit participation, health, life and dental insurance, vacation, holidays.

If qualified, send resume or call:
S. S. Pearl

(All inquiries held in strict confidence)



A Division of Pearl Equipment Company, Inc.
• P.O. BOX 24026 •
• 4717 CENTENNIAL BLVD. •
• NASHVILLE, TN 37202 •
• (615) 383-8703 •

"THE LEADING EDGE"

APPLICATIONS SYSTEMS

Programmers
Programmer/Analysts
Systems Analyst
Project Leader
Project Manager
3033/31

Banking, Manufacturing and Insurance Applications 5370
MVS OS/VS DOS/VSE DOS/VS VM
CICS/VS(COMMAND & MACRO) IMS/VS, ANS COBOL, ACF/NCP,
NCCF, NPDA, ACF/VTAM VSAM, VTAM, SYSGENS, ALC

You've got the skills - I have the Sunbelt openings you're looking for!! My 20+ years of DP Recruiting has allowed me to establish a firm rapport with "Fortune 500" clients that seek professionals with your skills. I deal directly with these companies, and YOU deal directly with me. (Not other recruiters or branch offices). Listed below is a partial list of locations. (Yes I have made placements in all of them)

JACKSONVILLE
DALLAS
TAMPA BAY
DENVER
NEW ORLEANS
RICHMOND

ATLANTA
ORLANDO
HOUSTON
PHOENIX
WINSTON-SALEM
MIAMI

INTERESTED!!!! Send me a resume or call for an appointment (904) 398-7371 (I'm on the phone a lot - leave a number if I'm busy - I'll get back to you!) Our clients assume all fees including interviewing and relocation costs.

**CONTACT BILL DENNY, V.P.
JIM KING & ASSOCIATES**

1840 Gulf Life Tower

(904)398-7371

Jacksonville, FL 32207

position announcements

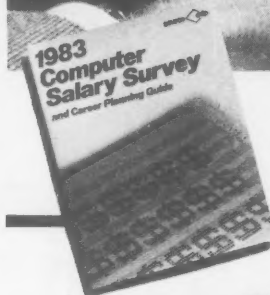
position announcements

position announcements

position announcements

position announcements

Somehow, Did Your Last Raise Seem Insignificant?



New, Free Computer Salary Survey!

Learn about compensation in the computer field, including the effects of inflation and recession, and which career paths offer the greatest compensation from a 28-page report prepared by Source Edp.

Despite past inflation and recession, demand for computer systems and the people needed to support them continues to grow.

But which professionals, with what specialized experience and skills, are really in the best positions for long term career and salary growth? And is your salary really keeping pace?

In our new Survey, you'll get answers to these questions and much more.

Compare your salary with many others.

The new Survey not only provides salary medians for 48 position categories, but it also shows "highs" and "lows" for each one as well. Figures are organized by types of professionals, including those ranging from commercial programmers to management and marketing positions; by experience level and by size of computer installation site.

So you'll be able to compare your salary with those computer professionals who have similar responsibilities and skills and to learn who in computing, in what kinds of specialized disciplines, are earning the most.

No other Survey we know of is more comprehensive. It's based on contacts with more than 50,000 professionals and 25,000 organizations.

Learn about new growth areas.

Most significantly, you'll also read about which specific areas of specialization are forecasted for unusual growth in this decade and beyond. The past year saw many changes in the economy and has altered career prospects for some professionals who were not properly prepared, so the

need to stay abreast of current trends and career planning has never been so critical.

Whatever computer specialty you're in, or plan to explore—programming, software, systems design, data communications, mini/micro systems, data base, computer marketing, sales, management or others—our Survey can help you make the most of your career. You'll be able to keep up with changes in the profession, establish career goals, develop action plans, evaluate your progress, spot potential dangers, take corrective action when needed, and in general, keep your career on the best possible course for growth.

Call for your free copy.

The new 1983 Computer Salary Survey and Career Planning Guide is available without charge. You owe it

to yourself to get a copy of the report—especially if most of your career lies ahead of you.

Call today and our free 28-page Survey will be mailed to you in strict confidence, without obligation.

source edp
Personnel Services.

The world's largest recruitment firm that specializes exclusively in the computer profession.

Client companies assume our charges.

Call today.

Call the office nearest you that is listed to the right. If unable to call, write:

Source EDP, Dept. CS3
P.O. Box 7100
Mountain View, CA 94039

(When writing, please indicate your title.)

Call today.

United States:

Arizona
Phoenix 602/279-1010

California
Northern 415/969-4910

San Francisco 415/434-2410

Walnut Creek 415/945-1910

Century City 213/203-8111

(Southern) Fullerton 714/871-6509

Los Angeles 213/585-0041

Newport Beach 714/833-1730

San Diego 619/231-1900

Torrance 213/540-7500

Van Nuys 213/781-4800

Colorado
Denver 303/571-4450

Englewood 303/773-3700

Connecticut
Hartford 203/522-6590

Stratford 203/375-7240

District of Columbia
Washington D.C. 202/466-5890

Florida
Miami 305/624-3536

Georgia
Atlanta (Downtown) 404/588-9350

Atlanta (North) 404/953-0200

Atlanta (Northeast) 404/325-8370

Illinois
Chicago (East Loop) 312/938-4400

Chicago (West Loop) 312/782-0857

Oak Brook 312/886-6422

Rolling Meadows 312/392-0244

Indiana
Indianapolis 317/631-2900

Kansas
Overland Park 913/888-8885

Kentucky
Louisville 502/581-9900

Louisiana
New Orleans 504/561-6000

Maryland
Baltimore 301/727-4050

Towson 301/321-7044

Massachusetts
Boston 617/482-7613

Burlington 617/273-5160

Worcester 617/237-3120

Michigan
Detroit 313/259-7607

Southfield 313/352-6520

Troy 313/262-0070

Minnesota
Minneapolis (Downtown) 612/332-6460

Minneapolis (West) 612/944-3600

Missouri
Clayton 314/862-3800

Kansas City 816/474-3393

New Hampshire
Nashua 603/880-4047

New Jersey
Cherry Hill 609/482-2900

Edison 201/484-2800

Morris Plains 201/267-3222

Paramus 201/845-3800

Princeton 609/452-7277

New York
New York City (Grand Central) 212/957-8611

(Penn Station) 212/736-7445

(Wall Street) 212/863-8000

Rochester 716/263-2670

Syosset, L.I. 516/384-2900

White Plains 914/683-9300

Ohio
Akron 216/535-1150

Cincinnati 513/789-5080

Cleveland 216/771-2070

Columbus 614/224-2660

Dayton 513/461-4660

Oklahoma
Tulsa 918/599-7700

Oregon
Portland 503/223-6180

Pennsylvania
King of Prussia 215/265-7250

Philadelphia 215/565-1717

Pittsburgh 412/261-6540

Wilkes Township 412/247-4400

Texas
Dallas (Central) 214/954-1100

Dallas (North) 214/387-1600

Fort Worth 817/338-9300

Houston (Downtown) 713/751-0100

Houston (N. Loop West) 713/957-8555

Houston (S.W. Freeway) 713/626-8705

San Antonio 512/342-9898

Virginia
McLean 703/790-5610

Washington
Bellevue 206/454-6400

Wisconsin
Milwaukee 414/277-0345

Canada:
Ottawa 416/425-5730

Don Mills 416/272-3333

Mississauga 416/865-1125

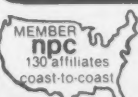
Toronto
Montreal 514/849-7043

NEW YEAR OPPORTUNITIES IN NEW ENGLAND AND NATIONWIDE

The New Year is here, and that means New Budgets and New Openings among our client base of the finest High Technology, Defense, Insurance, Manufacturing, Banking and Service Companies. Positions are available at every level including:

Software Engineers To 50K
Systems Programmers To 42K
Programmer Analysts To 35K
Systems Analysts To 39K
Project Leaders To 40K
Graphics and CAD/CAM To 45K

One call to 1-800-628-3374, in Mass call collect 413-781-0982 will put you in touch with over 100 job markets throughout the country insuring your selection of the best position for you.



dpspecialists
DYNAMIC PERSONNEL SYSTEM
P.O. Box 539
West Springfield, MA 01090

PROGRAMMER/ANALYSTS Project Leaders

AUXCO, a leader in the telephone and communications industry, has several immediate opportunities available for consulting professionals with exposure in the following areas:

- COBOL - IMS
- PL/1 - IMS
- COBOL - CICS

Candidates must possess 2+ years experience with the above software systems in an IBM mainframe environment.

- ALSO -

IMMED OPENING FOR PROJECT LEADER

... with 4+ years experience on the IBM Series 1 minicomputer using EDX.

For consideration, send resume:

JAN ACKERMAN
AUXCO

201 East Pine St., Suite 210
Orlando, Florida 32801

An Equal Opportunity Employer

UNIX IN THE SUBURBS OF D.C.

M-68000's - FAULT TOLERANT PROCESSING
OFFICE AUTOMATION SYSTEMS

Programmers - Architects - Section Managers

MID - \$30's to MID - \$50's

We are being retained to staff a Development Facility in the D.C. suburbs. An excellent relocation package is available.

February Weekend Interviews with Hiring Managers in the following areas:

• Boston • D.C. • New Jersey

• Connecticut • Philadelphia • Columbus, Ohio

Call Michael O'Keefe or Rick Stevens at (803) 472-8844



Agencies invited to call,
Management Advisory Services Inc.

Colonial Office Park
48 Constitution Drive Bedford, NH 03102

Search & Placement Specialists representing an Equal Opportunity Employer

*UNIX is a trademark of Bell Laboratories

position announcements

position announcements

position announcements

position announcements

position announcements

COMPUTER and CONTROL SYSTEMS OPPORTUNITIES



SOHIO CORPORATE RESEARCH

Contribute to SOHIO's Computer and Control Systems Research, Development and Applications.

Our Corporate Research Center is building an active program of research in computer and control systems, technologies and applications. As members of a dynamic organization, you will develop research programs and conduct technology surveys and evaluations. Please review the following positions, then respond, specifying your particular position interest and relevant expertise.

ADMINISTRATIVE INFORMATION SYSTEMS PROJECT LEADER — Your background includes a BS in Computer Science (ideally an MBA), and 5 years of related experience in management information systems. You would assume responsibility, working with senior administrative staff, to define and implement projects for SOHIO's Research and Development Administrative Information System. Proven project management and excellent interpersonal skills are important to successfully direct computer projects from conception to implementation.

SYSTEMS DESIGN PROJECT LEADER — Capitalize on your MS in Computer Science and 5 years of real-time, time-sharing and interactive applications. You're also knowledgeable in DEC computer systems, VAX/VMS, and PDP 11/RX-11-M. You're capable of translating users' requests into functional systems, and ideally possess a demonstrated ability to perform well as a consultant.

At our new state-of-the-art Corporate Research Center in an attractive Cleveland suburb, you will find a professionally rewarding work environment, attractive total compensation plan, comprehensive benefits, and the opportunity to make significant contributions to help meet our future energy needs and demands. SOHIO's relocation package for new hires who are homeowners includes a mortgage interest differential allowance, third party home purchase option, and other features often restricted to internal transfers.

Join a fast growing, results-oriented Fortune 20 corporation. Start by sending your resume and salary history/requirements, in complete confidence to:

Peter J. Piro, Sr. Executive Recruiter
THE STANDARD OIL COMPANY (Ohio)
1424 Midland Building — 477 • Cleveland, Ohio 44115
An Equal Opportunity Employer M/F/H/V
NO THIRD PARTY INQUIRIES, PLEASE
"Help us Help to Assure America's Energy Future"

SOHIO

SYSTEMS ANALYST

Pulp and paper manufacturer is seeking an individual with a BS degree plus a minimum of 3-5 years experience in programming and systems. Experience in the areas of manufacturing, distributed processing, on-line application, and COBOL-considered a plus.

This position offers a challenge with excellent benefits and salary. Send resume including education, work experience and salary requirements in confidence to:

Staff Assistant-Personnel

THE CHESAPEAKE CORPORATION OF VIRGINIA

West Point,
Virginia 23181

Equal Opportunity Employer M/F

University of Wisconsin-Eau Claire
COMPUTER SCIENCE

The University of Wisconsin-Eau Claire is accepting applications for tenure-track faculty positions in the Department of Computer Science for the 1983-84 academic year, starting August 22, 1983. Responsibilities include teaching, both introductory and advanced courses as well as providing academic advising to students.

Salaries are competitive and commensurate with qualifications and experience. University fringe benefits such as health and life insurance are also provided. Qualifications include a Master's degree (Ph.D. preferred) in computer science with emphasis in system software and experience with high level languages including PASCAL. Experience in microcomputers, graphics, hardware organization or secondary education applications is desirable but not necessary. If you are interested in joining a teaching community that is committed to the achievement of excellence, please submit a letter of application, resume, transcripts and references prior to March 4, 1983 deadline to:

Dr. David A. Nuesse, Chairman
Department of Computer Science
University of Wisconsin-Eau Claire
Eau Claire, WI 54701
715-836-2526

DP MANAGER

Opportunity to establish new operation. 7 to 10 years experience. Large scale IBM. Strong management skills and state-of-the-art know how. Degree required. Salary range \$38,000 to \$45,000. Reply in confidence to:



1211 N. Westshore Blvd.,
Tampa, FL 33607
(813) 872-1853

PROGRAMMER ANALYSTS
SYSTEMS ANALYSTS
SYSTEMS PROGRAMMERS

Immediate need for IBM or Honeywell medium to large mainframe exp. with COBOL, Assembler or FORTRAN. Experience in banking or manufacturing environment especially attractive. All positions require a 4 year Bachelor's degree with 2-10 years experience, and excellent communication skills. All positions are in progressive, STABLE DP environments, with fees and relocation addressed by my clients. Competitive salaries \$25-35K, depending upon experience.

Let us be your FIRST STOP in the southeast. Winston Placement Inc. has been placing professionals for 17 years. Let our experience and knowledge of the job market benefit you in your job search.

Call Janet Gentry, CPC
Winston Placement Inc.
P.O. Box 15366
Winston Salem, NC 27113
(919) 768-4040

SYSTEMS ANALYSTS
AND PROGRAMMERS
FOR SUNBELT
LOCATIONS

Job dissatisfaction, complacency, and frustration are the biggest obstacles to overcome to achieve one's career goals. Every day new career opportunities pass us by because we are unaware of their existence. Let us keep you abreast of what your true value is in the market place. Absolutely no obligations, please call or write Keith Reichle, CPC, Data Processing Specialist.

Dunhill

OF CHARLOTTE, INC.
6401 Carmel Road, Suite 107
Charlotte, North Carolina 28211
800-438-2013
(NC Call)
(704) 542-0312

ADVERTISING SALES
PROMOTION WRITER

Major NYC agency has opening for a solid creative pro who can write business-to-business copy that excites — and explains. Experience in data processing or industrial-type accounts preferred. Technical background helpful but not necessary. Strong staff support provided, in an atmosphere of creative excellence. Send resume to:

CW-84059
Computerworld
Box 880
Framingham, Ma 01701

EEO M/F

BANKING SPECIALISTS



NU COMP SYSTEMS, INC.

NU COMP Systems, Inc. is a leading software development company providing banking and financial community with application support in an IBM System 34/38 environment. Our primary product is the System-34 Banking System. This proprietary software package integrates CIF, DDA, SAVINGS, CD's, I.L.A., M.L.A., C.L.A., and G.L. enabling bankers to achieve in-house control over their own data processing and thereby have immediate access to information necessary for responsible decision-making.

We are experiencing rapid growth and need to add professionals to our staff to install, maintain, provide telephone support, and develop our state-of-the-art banking systems. We have outstanding opportunities for individuals seeking work in a challenging, stimulating environment where individual initiative is rewarded.

We are interested in talking with you about career opportunities within NU COMP if your data processing credentials include:

- 3+ years of S/34 banking experience with RPGII OR
- 4+ years of computer banking experience OR
- 4+ years of S/34 RPGII

If you fully satisfy these prerequisites, please submit, in complete confidence, a resume which details your experience, education, salary history, and major accomplishments.

NU COMP SYSTEMS, INC.

Suite 100
Liberty State Bank Building
1573 Selby Avenue
St. Paul, Minnesota 55104
ATTN: John Williams

GOOD THINGS HAPPEN
ON THE CHESAPEAKE BAY

We're DYNAMAC CORPORATION, Information and Management Systems Division.

We built our success on a history of quality service.

- Development of complex online DBMS applications.
- Innovative use of powerful minicomputer technology.
- Design of large-scale distributed systems.

DATABASE ADMINISTRATION

- UNIVAC DMS-1100
- User Data Base Requirements
- Logical Data Modelling
- Data Base Design

MINI-COMPUTER SYSTEMS SUPPORT

- TANDEM Non-stop Systems
- Operating System Support
- Data Base Development
- Networking

If you would like to be on board in time for our next success, call 'Susan' COLLECT at (301)468-2500 EXT. 330 and send resumes to:

DYNAMAC CORPORATION
PAX PROJECT
c/o Personnel Dept.
11140 Rockville Pike
Rockville, MD 20852

SUCCESS
THRU
QUALITY
EOE m/f

SENIOR
PROGRAMMER
ANALYSTS

For an outstanding career opportunity with a national retailer based in sunny South Florida,

Jefferson Ward

invites qualified candidates to join our exciting team of MIS professionals. We offer high level development including online and distributed systems coupled with a dynamic environment including multi CPU, a national network, MVS, TSO, CICS and point of sale.

Qualified candidates will have:

- 5 years programming experience including CICS command level.
- Retail financial or POS experience a plus.

We offer excellent benefits and upward mobility in our young growing Data Processing organization. For immediate consideration, send resume to: JEFFERSON WARD, 15800 N.W. 13th Avenue, Miami, Florida 33169, Attention Recruiting.

PROGRAMMER ANALYST

PL/1 PROGRAMMER

PL/1 Programmer to work on Data Base systems; opportunity to enhance and learn IMS, CMS, Mark IV, VSAM, and On Line Systems. Requirements: 2 years IBM 370, JCL, PL/1. Environment: IBM 3081, VM/CMS, OS/VS (moving to MVS), IMS DB, CICS DC. Full benefits including 24 paid vacation days, life insurance, medical and pension plans and more.

Send resume with salary history to: JOAN DOIG, PRINCETON UNIVERSITY, PERSONNEL, CLIO HALL-1, PRINCETON, NEW JERSEY, 08544

Equal Opportunity/Affirmative Action Employer

position announcements

position announcements

position announcements

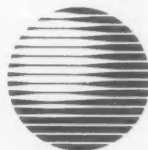
position announcements

position announcements

DP Management/Non-Management
Application Design/Support/Consulting
Systems Programming

We're American Bell. We're operational. And we're now staffing two new DP facilities in Orlando and Denver.

American Bell is open for business, and we're moving fast. We need to identify top caliber DP professionals for each of these new facilities. These openings represent exciting, high visibility, high potential opportunities.



*Trademark of Bell Laboratories

In Orlando...

We have a large-scale, state-of-the-art facility that is already operational. The facility concentrates on providing expert systems programming and application design/support/consulting services. This multi-cpu environment encompasses:

HARDWARE

IBM 308X, IBM/Comten 3705, 3690 or equivalent front end processor

DBMS

CICS/VS, IMS/VS, Model 204, Ramis/Focus, DASD Management, ADABAS

LANGUAGES

COBOL, PL/1, Fortran, C, Shell Programming, UNIX*

NETWORKING ENVIRONMENTS

VTAM/NCP, VM/SP, TSO/SPF, VM/CMS, VSAM

We're looking for Systems Programmers and Application Design/Support Consulting Professionals with at least 3 years of experience in their field and some mix of expertise in the areas described.

In Denver...

Target date for start up is April 1st. There are high potential opportunities at both management and non-management levels for professionals qualified to contribute effectively to a large-scale, state-of-the-art facility. Our function...and yours...will be to provide high level hardware and software support to American Bell operations in the Western Region.

We seek top caliber DP professionals with some mix of experience in

**MVS, IMS, CICS, JES, UNIX,* IBM 308X
Compatible Peripherals**

If you want to be considered for these really unique opportunities rush your resume to me: W. P. Kroll, District Manager, Dept. 101, American Bell, Inc. POB 13970, Orlando, FL 32859

If you qualify, you'll be contacted for a convenient local interview at an early date. (We regret that we cannot accept phone calls...or pay agency fees.)

American Bell

An equal opportunity employer

SYSTEMS PROGRAMMING MANAGER

Take A Byte Of Our Internals

Are the challenges at your current company leaving you unfulfilled? If so, maybe it's time you considered the NYC Department of Finance's OMIS office.

You're ideal for this position if you have strong hands-on experience in a dual CPU facility, preferably in an IBM 4300 environment under OS/VS1 and VM/370 with CICS in a shared peripheral system. And since we're planning on expanding to a VTAM based system, your familiarity with VTAM is a definite plus as would be any exposure to ADABAS/DBMS. You must have a minimum of 6 years impressive DP experience, 2 of which should be at the management level, plus excellent communication skills, and the ability to interface effectively with all levels of management.

The wide-ranging responsibilities of this position include managing an in-house technical staff, evaluating hardware as well as systems/applications software, implementing and supervising various operating standards and procedures, as well as other related services in an area of systems performance, tuning, upgrade, and maintenance.

If you're ready to byte into these challenges, and then some, and you meet our qualifications, we'll offer you a salary commensurate with your experience, plus a comprehensive benefits package featuring a liberal vacation. Just send your resume, including salary history, in confidence, to:

N.Y.C. Department of Finance
Personnel Division
1 Centre Street, Rm: 1038
New York, New York 10007
Equal Opportunity Employer M/F

EDP OPPORTUNITIES

Comm Engr BSEE and dig voice data F.V.
Sbs Acc Xlen BSEE/MSEE \$60M +
COMM Engr A/D Sdc mobile radio \$58M
BSEE/MSEE-So deg \$57M +
DATA Network Arch Sna Dec/Net telnet
BSEE/MSEE or Sci deg \$57M +
CAPACITY Planning Software/Hardware
comm \$55M +
TRAFFIC Data reduction modelling, simula-
tion, CCSA Fx Wats BSEE/MSEE \$55M +
DATA NET Arch Sna Sdc Dec/Net telnet
MS BS Comp/Sci \$51M
PROJ MGR Team/Cics alp SOM, staff 4 new
system dev \$51M
COMM Engr A/D Data/Voice satellite
BSEE/MSEE \$47M
CICS OS Idms trade sys dev \$45M
SOFT VS1 CICS Viam imp \$43M
ADABAS Soft internal 3rd normal form
collective views \$43M +
PROJ MGR Proj life cycle, staff 10,
IMS 30xx \$42M
ADABAS 3rd normal modelling, planning
collective views \$43M +
DEC 20-tops soft EXPERT D/B interactive
reports Gen, screen handlers \$39M +
RAMS Wall St fnci, client contact \$35M
S/A Dco auto micro mini sys generalist with
sm prior program exp \$32M
CICS OS MVS Cobol sys dev, prestige corp,
state of the art \$31M + bonus
PROGRAMMER Fortran Basic fnci sys
data base \$29M
SYSTEM Analyst Micro mini dev \$25-33M
WALL ST Micro/Mini fnci sys dev \$25-33M
INSURANCE Fnd sys dev \$25-33M
micro/mini \$25-33M
JR PROG Lt CICS acctg sys dev \$23M +

Call Bill Borrelli (212) 349-3610
WM. HARRIS ASSOC.
25 Ann Street agency NY, NY 10038



Systematics, Inc., America's Largest and Fastest Growing Full Service Bank Data Processing Company. We serve hundreds of bankers across the country with facilities management, application software packages, and remote processing services.

Because of our continued growth, we are currently recruiting for qualified professionals for the above noted locations. Our needs include programmer/analysts, systems analysts, programming managers, data center managers, technical liaisons, and corporate data processing personnel. Banking industry experience preferred.

For immediate consideration or more information, write:

Recruiting Department
Systematics, Inc.
4001 Rodney Parham Road
Little Rock, Arkansas 72212-2496

No agencies, please.

An Equal Employment Opportunity Company

position announcements

position announcements

position announcements

position announcements

position announcements

DP CONSULTANTS: DESIGN YOUR OWN CAREER PROGRAM

In Florida or the Northeast

Beamer Associates, the recruitment consulting arm of Computer Horizons Corp., is announcing the newest approach in the DP Consulting industry: the "Design Your Own Career Program"

With our network of blue-chip Fortune 500 companies and top D.P. Consulting firms, talented DP Consultants can virtually design their own careers. Work for a few months or a few years on staff or on per diem. Start immediately, or anytime in the future. In any region of the U.S. Winter in Florida with a different assignment in the Fall.

The possibilities are limitless...

Beamer's new concept doesn't stop there. In addition to earning top compensation, we'll give you relocation assistance, full benefits and career counseling.

Currently, we're highlighting key opportunities in:
Central and Western Florida,
New York and New Jersey
for

SYSTEMS PROGRAMMERS, COMMUNICATIONS (TP) SPECIALISTS, PROGRAMMERS and PROGRAMMER ANALYSTS

with the following expertise:

IMS (DB or DC)
COBOL or PL/1
CICS COMM/or
MACRO

UNIX 'C'
MODEL 204 DATABASE
VTAM
SNA

IF YOU'RE NOT INTERESTED IN THE ABOVE LOCATIONS, WE WOULD STILL LIKE TO HEAR FROM YOU FOR OPPORTUNITIES IN OTHER REGIONS....

At Beamer Associates, we think it's time for DP Professionals to have the option of designing their own career programs. If you would like to be more flexible or just want to earn higher dollars, contact

Lauren Dinario
Manager of Recruiting

800-223-2554
In N.Y. State (212) 838-4441

BEAMER ASSOCIATES

Suite 1500, Department 'B'
747 Third Avenue
New York, New York 10017

An Equal Opportunity Employer M/F

PROGRAMMER/ ANALYST

Develops automated systems in support of financial aid operations. Specific duties include designing, preparing and testing of programming, defining programming requirements, providing systems programming support to office Series/1 mini computer, maintenance of existing systems and preparation of documentation. Bachelor's degree or equivalent, preferably in Computer Science, four years programming experience, knowledge of COBOL, OS/VS JCL, Event Driven Language. Strong communication skills and a familiarity with statistical and report generation packages, and knowledge of 370 Assembler or S/1 Assembler are important qualifications. Salary is highly competitive and there is an excellent fringe benefit program. Send resume and salary requirements to:

**NEW YORK
UNIVERSITY**
A PRIVATE UNIVERSITY IN THE PUBLIC SERVICE

Office Of
Financial Aid
c/o Employment Office,
246 Greene Street
New York, New York 10003
Attn: Kim Miller

NYU is an Equal Opportunity/Affirmative Action Employer

CHICAGO

SYSTEMS ANALYSTS

Immediate openings for Systems Analysts with 5+ years data processing experience. Manufacturing and financial background desired. Must have on-line skills. Looking for professionals with new ideas. Excellent opportunity with rapid growth company.

\$35,000

ROBERT HALF OF CHICAGO, INC.

35 E. Wacker
Chicago, IL 60601
312/782-4370

IBM

SUNBELT CAREERS

P/A, S/A, DBA

IMS or CICS EXP. REQ.

SYSTEMS PROGRAMMERS

MVS, VM, DOS, IMS or CICS EXP.

All positions fee paid.

Call or send resume today.

Our 14th yr. as recruiters

Pam Spears, CPC

TOLL FREE

800-334-4220

IN NC (919) 484-4101

NATIONWIDE

PERSONNEL SERVICE INC.
P.O. Box 35925
Fayetteville, N.C. 28303

SYSTEMS ANALYST. Design, analysis & implementation of programs for systems conversion from manual procedures, rtd to financial insts. Investigation & enhancement of existing systems. Make test runs & corrections as necessary. B.Sc. in Computer Science. Must have knowledge of COBOL, ASSEMBLER, JCL & CMS. 2 yrs or 2 yrs p programming. \$35,000 p.a. to work 37 1/2 hrs/5 days/wk. PLEASE SEND RESUMES: CAP-CPP Service, Inc. 521 Fifth Ave. NYC 10175

FIELD ENGINEERS

Hartford Technical Services is seeking Senior Level 303X, 370, and 4300 X-IBM FE's with openings in Chicago, L.A., Houston, Detroit and Ohio. H.T.S. is a maintenance company that offers substantial savings and service to its maintenance customers. Salary and benefits commensurate with your expertise. If you are seeking a future and have these skills call:

Gerry Darr

(312) 364-0505

Hartford Technical Services, Inc.
515 East Gulf Rd.
Arlington Heights, IL 60005

COMPUTER SYSTEMS PROGRAMMER for employment in SAUDI ARABIA. Serves with a team of U.S. advisors to Saudi Arabian National Computer Center. Requires extensive experience using MVS operating systems on IBM 370 or 303X computers. Must be capable of installing, testing, tuning, and evaluating computers, telecommunications systems, utility packages, compilers, software packages, peripheral equipment, etc. U.S. Citizenship required. Family may accompany. Benefits include COLA, free quarters, free automobile, school allowance for dependent children, and much more.

Submit resume to: CONSULTANTS & DESIGNERS INC., 1725 Jefferson Davis Highway, Plaza Level, Arlington, VA. 22202. For more information, call toll-free (800) 365-3021. In Virginia, call (703) 521-2900.

COMPUTER PROGRAMMER TELECOMMUNICATIONS

The Dept. of Justice needs a COMTEN systems programmer to support their 2690s used for front-end processing and message switching. Applicants must have at least 2 years of experience with the internals of 3690 front-end processor software. COMTEN's EXEC90 and CTAM message switching system software find also possess knowledge of the IBM access methods (BTAM, RTAM, VTAM, TGA) used to support our user community with CMS, CICS, HASP and JES2. Other duties include problem diagnosis, hardware evaluation, acquisition planning and network design. Salary \$29,374 - \$34,930. Send an SF 171 to Wm. T. Deteling, Dept. of Justice, Justice Management Division, Justice Computer Service, Rm. 4003, 4251 Street N.W., Washington, DC 20530. An EOE.

GENERAL MANAGER

Division of stable, successful 59-year family-owned machinery/affiliate group requires aggressive individual with technical expertise and managerial capability to manage its Computer Division. Experience with DEC 11/70 On-Line System (RSTS/E - TOTAL/TAM - BASIC + 2) desirable. Highest compensation. Benefits include profit sharing.

SHEPHERD DATA SYSTEMS

Attn: Bill Burke
P.O. Box 22122
Los Angeles, CA 90022
(213) 723-7777 x405



CITY OF DALLAS Assistant Director, Data Base Administrator Department of Data Services

Position available to select and administer a Data Base Management System (DBMS). Person will be responsible for collecting and organizing material for storage and retrieval from the DBMS. Monitoring data base usage; collecting statistics on utilization of data and programs; refining and expanding current Business Systems Planning effort; recommending revised programming standards; participating in budget review meetings; and supervising the City's office services division.

Salary range \$41,992 - \$52,945 depending on qualifications.

Successful applicant should have bachelors degree in business with a concentration in systems analysis or computer programming including data base concepts, design and administration plus five years related experience. Two years experience should be in ALC and/or a higher level programming language, and computer applications systems analysis and design. Experience in implementing a DBMS is highly desired.

Interested persons should submit a detailed resume by Monday, January 31, 1983 to:

Personnel Department
Staffing Manager
City Hall - 6AN
Dallas, Texas 75201
Equal Opportunity Employer
m/f/h

SR. SYSTEMS ANALYST

We are a respected Midwest leader in energy-related research and manufacturing, a dynamic part of a Fortune 150 corporation. The Senior Systems Analyst we seek will work directly with management and user department personnel in providing wide-ranging MIS support.

Initial assignment will be to implement a new general ledger and project accounting system. Future challenges will involve feasibility studies, systems analysis/design and the implementation/testing on a variety of business systems applications for both new and enhanced systems.

The ideal candidate should have an MBA and at least 6-8 years related experience in planning, development and implementation of business information systems. Familiarity with data base technology would be highly desirable.

We offer a competitive salary, excellent benefits, outstanding advancement potential and the relaxed living environment of a pleasant midwestern city. Please send resume with salary history and requirements, in confidence, to:

Box CW 806

810 Seventh Avenue, New York, N.Y. 10019
An Equal Opportunity Employer M/F/H/V

PROGRAMMER ANALYST

Downtown L.A. area firm has issued an "ALL POINTS BULLETIN" in search of a PROGRAMMER ANALYST with 3-5 years experience.

The successful candidate will have experience working with BASIC PLUS and DEC/RSTS systems in a business environment.

Interested and qualified candidates should send resume with qualifications and salary history to:



Cummins Sales & Service, Inc.
1800 E. 16th Street
Los Angeles, CA 90021
An Equal Opportunity Employer M/F

DATA BASE SPECIALIST

\$35,300

(or commensurate with experience)

The Office of Management Information Services has an immediate opening for an individual with a technical background in DBMS. Individual will be responsible for review of data base designs, monitoring performance, improving performance, assisting the Applications Staff in the use of DBMS, developing and enforcing DBMS standards and procedures, implementing and maintaining a data dictionary, and overall responsibility for security and access to the data base.

Qualifications must include extensive experience in the applications programming area as well as several years using DBMS. Thorough knowledge of DL/1 or IMS is preferred and experience in the DOS/VSE environment is required. Excellent benefits.

APPLY TO:

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 Fifth Street, N.W.
Washington, DC 20001
Attn: Human Resources

AN EQUAL OPPORTUNITY EMPLOYER

position announcements

position announcements

position announcements

position announcements

position announcements

UNIVERSITY OF ALASKA

As a result of phasing out a facilities management contractor the University of Alaska has openings for management positions in the University of Alaska Computer Network (UNET). The UNET facility serves 14 campuses in 12 communities across the entire state of Alaska. Currently, major hardware and software acquisitions for both academic and administrative computing are in progress which will replace the dual Honeywell 6640's now serving the user community. The opportunity to participate in a leadership role in a positive, constructive academic environment clearly exists.

Administrative Computing Services

The Director of Administrative Computing Services will be responsible for the development and/or enhancement of new administrative computer systems as well as maintenance and/or enhancement of current administrative computer systems. Based in Fairbanks, the director will supervise a staff of analyst/programmers to accomplish the above while maintaining documentation and programming standards.

The successful candidate will have considerable experience in the development of administrative computer systems as well as supervising experience.

CLOSING DATE: 2/7/83

Applications should be submitted to the following address:

Mr. William L. Clark
Asst. Vice President
for Computing Services
107 Bunnell
University of Alaska
Fairbanks, AK 99701

THE UNIVERSITY OF ALASKA
IS AN AEO EMPLOYER
AND EDUCATIONAL INSTITUTION.

Your application may be subject to public disclosure if you are a finalist for the position.

DATA PROCESSING

We currently have a job opportunity for an experienced Programmer Analyst. We require at least 4 years of active business experience as a Programmer and Systems Analyst. The successful candidate will have designed and implemented data base systems in the IMS, IDMS or similar DBMS environment. A degree in Computer Science will partially fulfill the experience requirements for this position.

Our Corporate Information Services Department is centrally located in an attractive, modern facility offering a comfortable working environment.

We offer an exceptional benefits package which includes medical, dental, vision, life, AD&D coverage, profit sharing, bonus and educational reimbursement.

Please direct your resume to: J. Fred MacKissic, 2755 Campus Drive, San Mateo, CA 94403, or call (415) 574-3333.

DATA BASE ADMINISTRATOR

A progressive electric utility is seeking a self-motivated individual for the position of Data Base Administrator. The ideal candidate should have a degree in Computer Science with 5 years related experience. Current system is an IBM 370/158, OS/VS1 with IMS DB/DC. Hardware and software being up-graded in the coming year. Salary expected in the low 30's.

Successful applicant will find a relaxed way of life, excellent working conditions, year 'round outdoor recreation, a safe place to raise a family, and exposure to the delightful atmosphere and cultural pleasures of historic Charleston. We are one of the fastest growing electric utilities in the nation, and excellent growth opportunities are available.

Send resume and salary requirements in confidence to:

Wm. Glen Brown
Employment Supervisor
Santee Cooper
P.O. Box 398
Moncks Corner, S.C. 29461
803/899-2121

An Equal Opportunity Employer

Our product is energy,
but our most important
resource is people.



In Colorado, There's Room to Grow... Straight to the Top

Storage Technology Optical Disk is involved in the design, development, manufacturing, and marketing of Optical Data Recording products. Located at the base of the Rocky Mountains, our location offers a unique lifestyle with outstanding cultural and recreational opportunities minutes away in Boulder, Colorado. Expanding Research and Development efforts for our Optical Data Recording products has created the following opportunities:

• MVS SYSTEMS PROGRAMMER

You will be primarily responsible for system support and secondarily responsible for program development in a Test Engineering and Manufacturing environment. In this position you must know MVS/SP rel 1.3 and be capable of running SYS GEN in an IBM 4341-2. Additionally required is familiarity with JCL and JES21 as well as the capability to debug and resolve system problems. Knowledge of VM/SP, RSCS, and passthru is desirable. BSCS degree or equivalent and minimum of six years engineering experience is required.

• DATA BASE DESIGNER

You will be responsible for the architecture and design of a DBMS to collect data from Unit and System Test for inquiry, reports and archiving. Knowledge of MVS/SP rel 1.3, UNIX, C, and Data Communication concepts are highly desirable. A BSCS or equivalent and a minimum of six years engineering experience is required.

• TEST SYSTEM PROGRAMMER

You will be a member of a Test Equipment design team writing Software to control diagnostic software testing, create test automation facilities, and data base software. You must have a solid working knowledge of UNIX and C. Knowledge of MVS/SP rel 1.3 is desirable. BSCS or equivalent and minimum of four years engineering experience is required.

Storage Technology offers an excellent benefits package including relocation, health, dental and life insurance, stock purchase plan and much more. For immediate consideration please send your resume to Mr. Dan O'Reilly, Dept. 124, MDFF, #51, 2270 S. 88th St., Louisville, CO 80028.

Equal Opportunity Employer

Storage Technology



CONSULTANTS, ANALYSTS, PROGRAMMERS, FOR AN OUTSTANDING OPPORTUNITY

LOOK AT US!

We are a software services firm seeking individuals who are looking for enhancements to their skills, higher income and a voice in their careers.

If you have a minimum of three years experience, IBM mainframe, CICS, or IMS — you fit our immediate hiring profile, but our needs are diverse and we would like to talk to all experienced Data Processing professionals.

We Promote From Within. We Are Objective Driven.

Our only product is people. We are sensitive to our employee's income... health and welfare... careers... skills enhancement... and recognize each person's contribution.

If you are interested in pursuing your future with a company whose future depends upon its employees...

LOOK AT US!

Our Dearborn office processes all applications for each of the following areas:

Atlanta — Chicago — Dallas — Denver — Detroit
Houston — Phoenix — Sacramento — Tulsa

Please phone us collect or send your resume to:

Personnel Resources

CIBER, INC.
Parklane Towers West
Suite 1616
Dearborn, MI 48126
(313) 871-1221

Equal Opportunity Employer M/F

We are looking for Consultants and/or Engineering Companies as Licensees for Computerized Maintenance Planning and Control System. The system covers the planning and control of periodic inspections and will record defects, indicate weak components, and control the work load in maintenance departments. The system will also be involved in job preparation and work control, control of maintenance stores, budgeting and control of maintenance cost and output control in maintenance departments. Licensee will be supplied with all aides, sales support and the name "Grothus", known world-wide for successful and practical solutions in plant maintenance. Arrange for a meeting in Chicago in March 1983 through Grothus, Institut für Anlagentechnik, Wettinger 4, D-4270 Dorsten 21, West Germany.

DP MANAGER EDUCATIONAL INST.

A true manager's position for the experienced supervisory pro. Solid background in COBOL programming is required & a knowledge of PL/1 helpful. Small shop exposure preferred. Have mini system currently. Supervise staff & become involved with system dev. & implementation. Sound opportunity \$40,000.



ROBERT HALF
OF NEW YORK, INC.
523 Fifth Avenue
New York, N.Y. 10036
212-221-8500 (agency)

position announcements

position announcements

position announcements

position announcements

position announcements

LEADERSHIP IN ADA*

Today's most exciting development in computer science is the Ada program, designed to provide software developers with an integrated, state-of-the-art programming environment based on the new DoD common language. At SofTech, we are playing the leading role in the evolution of Ada, and are today in the forefront in developing production Ada systems.

Software Engineers/
Programmers/
Systems Analysts

To participate in all aspects of the Target Machine Group in the development of the Ada Language System. These positions require 2-5 years' experience in one or more of the following: • system software • linkers • loaders • assemblers • compilers. A knowledge of Ada is helpful. Selected candidates will become part of a highly respected team producing the first full Ada system.



Project Team Leaders

Individuals with 5-7 years' experience in system software are needed to participate in the development of the Ada Language System (ALS). The ability to manage a group of ten Programmers and Analysts is essential. Knowledge of real-time support systems, linkers and code generators is required. Familiarity with embedded computer use such as the MC68000, Rm 1666 and 1602B, VAX and MCF75 desirable.

An affirmative action/equal opportunity employer
*Ada is a trademark of the DoD
(Ada Joint Program Office)

We offer opportunities for professional growth inherent in a 500-person environment, coupled with excellent starting salaries and outstanding benefits. Please write to Judith M. Forsythe, SofTech, Inc., Dept. 679, 460 Totten Pond Road, Waltham, MA 02154.

SOFTech
THE SOFTWARE TECHNOLOGY COMPANY

Southeast Bank

The continued growth of Florida's largest bank has created the following career opportunities:

SR. PROGRAMMER ANALYSTS
(TANDEM)

Excellent ground floor opportunity to enter the innovative home banking area. A strong knowledge of TAM or COBOL is required; banking or financial applications background is desirable.

SR. SYSTEMS PROGRAMMER
(IBM)

Our state-of-the-art environment includes an IBM 3081 and 3033 with MVS, CICS and JES 2. An in-depth knowledge of MVS, JES 2 and Assembler is required in addition to strong debugging skills.

Southeast offers a complete company paid relocation package, excellent compensation and benefits in addition to tremendous growth opportunities in one of the area's most dynamic Data Centers. Please send resume and salary history in confidence to: Angela Smith, Employment Manager, SOUTHEAST DATA PROCESSING, INC., 1001 N.W. 7th Street, Miami, Florida 33136.

We Are An Affirmative Action
Equal Opportunity Employer

FACULTY POSITIONS

Two Business Computer Information Systems positions to teach 12 semester hours at undergraduate level to General Business and Computer major students.

QUALIFICATIONS: A Doctoral degree in Business or Computer related field preferred or commitment to work toward Doctoral degree required.

SALARY/RANK: Assistant/Associate Professor. Nine Months salary from low \$20's to low \$30's depending on qualifications. Candidates must submit resume and three letters of recommendation by February 15, 1983 (Positions are for September, 1983) to Dr. Herb Reblum, Chairman, Department of Business Services, University of Houston Downtown College, One Main Plaza, Houston, TX 77002.

UHDC is an EOE/AA Employer.

MANUFACTURING
ENGINEER

To develop tooling and provide technical expertise for immediate and long term manufacturing processes. The processes involve fabrication and assembly of small electrical devices. Requires BSEE and 3-4 years manufacturing experience which includes tool specification and design. Salary range: \$2,400 to \$2,600 per month. Send resumes to:

Nancy Thompson
M.D.E.S. #3-7
309 Second Ave. South
Minneapolis, MN 55401

Equal Opportunity Employer

DATA BASE
ANALYST

The Bendix Corporation, Electric Power Division is internationally known for its delivery of high performance electronic power generating systems for multimillion dollar applications.

experienced individual with a background in IMS DATA BASE Administration and Design. The qualified individual should also have demonstrated knowledge of CICS, TSO, COBOL, JES2, VSAM, and ISAM.

Educational prerequisite is a four year degree in computer science or some other related discipline.

Excellent benefits and salary available to qualified applicants. Send resume with salary history in confidence to M.

Weiss, Bendix Corporation, Electric Power Division, Eatontown, New Jersey 07724.



An Equal Opportunity Employer M/F/H/V

The power of ingenuity

SOUTHERN OPPORTUNITIES

S-A Fortran or Asm Mins. \$28K
P-A RPG II and Cobol Sys. 38 \$25K
S-A Banking Cobol Assembler \$32K
P-A Mfg Copies or Maps \$27K
Sys Prog OS/MVS Cobol/Asm \$38K
Sr CICS Sys Prog DOS/VSE SNA\$32K
Jr CICS Sys Prog DOS/VSE \$26K
SNA
IMS DB Cobol Saudi Arabia \$Open

ROBERT HALF
OF LOUISIANA, INC.

P.O. Box 57629
New Orleans, LA 70157
(504) 835-4296

Associate Director, Swarthmore College

provides technical assistance and advice to faculty and students, and maintains systems for academic computing and familiarly with administrative systems. Candidates should have BS/BA and 3 years experience in computing in higher education with previous PRIME experience highly desirable. Knowledge of communications equipment and microprocessors strongly preferred. The college offers competitive salary, pleasant environment, and good benefits. Please send resume, list of three references and salary history to: Marietta Lee, Director Personnel, Swarthmore College, Swarthmore, PA 19081 by January 31, 1983.

An Equal Opportunity Employer

Data Processing

System-38

A Unique Opportunity...

...to get in at the start. ARC Automation Services offers a full spectrum of automated insurance systems. Now, we're opening up a new operation in Dallas backed by the resources and reputation of our parent, Fireman's Fund Insurance Companies. This is an outstanding opportunity for talented people who are interested in a growing dynamic organization backed by the benefits and resources of a major corporation.

We're looking for talented professionals to assist in development and maintenance of our internal support systems on an in-house System/38. Candidates with strong background in analysis and design desired, IBM System/38, RPG III. Database on-line and telecommunications experience are a plus.

If this position sounds interesting, and you're looking for a young, dynamic organization in which to grow and prosper — send your detailed resume to ARC Automation Services, Attn: Kathy Jenkins, P.O. Box 169063, 8605 Freepoint Parkway, Irving, TX 75063. We are an equal opportunity employer m/f/h/v.

**ARC AUTOMATION
SERVICES, INC.**
A FIREMAN'S FUND COMPANY

AVIONIC SOFTWARE

Longterm - Southern California locations
High rates - Immediate Needs
U.S. Citizen - Sensitive Project
Systems Analysts ...to \$35/hr.
Software Analysts ...to \$35/hr.
Programmers ...to \$32/hr.
Jr. Programmers ...to \$20/hr.
Data Analysts ...to \$18/hr.
Data Coord. ...to \$14/hr.

TELL A FRIEND
Multiple Openings All Positions
Send resume

KIRK-MAYER, INC.
19725 Sherman Way, Ste 280
Canoga Park, CA 91306
(213)700-8000
EOE M/F/H

PERSONAL INTEREST
PROFESSIONAL COURTESY

Data Admin. Health Care \$27-35K
Project Leader Fin. Appl. \$28-30K
Data Base Analyst IMS \$22-28K
Systems Programmers, Several Open
Mfg. Systems & Programming, Mfg. \$35-42K
PROGRAMMERS-SYSTEMS ANALYSTS
PL1, CICS and/or IMS a plus \$22-30K
Fortran Eng. Support \$23-27K
Cobol Data Base, Mfg. \$24-30K
Cobol Dual 168 s Finance \$23-30K
RPG II S.34 Finance or Mfg. \$18-25K
S.38 MAPICS Several \$23-30K
Supervisor RPG III, Cobol \$27-30K

Nationwide Openings. Fee Paid.
Resume to: Carol Stuart, DP Div.
ETHAN ALLEN PERSONNEL AGENCY
30 W. State St., Binghamton, NY 13901

BANKING

Sunbelt Locations

SFTW ENG	OS/MVS	To 40K
SFTW ENG	OS/MVS/IMS	To 40K
SFTW ENG	DOS/VSE/CICS	To 35K
P/A	DOS/DB OR MCR	To 35K
P/A	3800 SUPPORT	To 30K
PROJ LDR	DBA (IBM OR BUR)	To 37K
P/A	SUPER/MCR	To 40K
P/A	DDA CICS	To 28K
P/A	CPS OS/MVS	To 35K
DBA	IS/DB/IMS	To 35K
P/A	SYSTEM 38	To 33K
HOGAN	NEED VERY BAD	To 40K
P/A	2 YEAR BANKING	To 27K
P/A	LIFE 70-LIFE COM	To 35K

Client Company Pays Fees.
Interview And Relocation Cost

Executive Consultants
1600 Fairfield, Suite 410
Shreveport, LA 71101
(318) 222-1000

DATA ADMINISTRATOR
TO \$32K

Our CENTRAL PA client seeks strong knig of HEALTH CARE INDUSTRY and how data is used to expedite problem resolutions. Qualified candis will have a HOSPITAL BKGD, work well w/ scope, have good organizational skills, and know how to estab a data base on a non-technical basis using IMS concepts. Exc bnfts. INTV NOW.

Contact: BOB GREENBERG

McFadden
8111 Church Rd.,
Suite 214
Cherry Hill, NJ 08002
(609) 488-0500

DIRECTOR
INFORMATION SYSTEMS & OPERATIONS
LOS ANGELES, CA.

Managerial position with computerized Int'l. Royalty Collection, Acct'g. & Copyright service dept. of major music publishing co. Work with Syst. Analysts & Programmers in program design & hndrs. selection, train staff in use of syst., hire staff, dept. budget, liaise with legal dept., syst. expansion & updating. Req. H.S. completion & 5 yrs. exp. Sal. of \$37,000/yr. Resumes to:

CW-84065
Computerworld
Box 880, Framingham, MA 01701
Must be received by Feb. 14, 1983.

position announcements

position announcements

position announcements

position announcements

position announcements

data processing

Challenges at the Leading Edge of Insurance Systems

Before you contact anyone else about our opportunities, contact us directly...

Why take the long route through a 3rd party job referral source when you can take the quickest way by contacting us directly? Our outside hiring sources are limited, so the best way to assure prompt consideration is to send your resume directly to Zurich-American. We are currently adding to our corporate staff with a variety of openings in our Commercial Lines and Personal Lines departments.

Our sophisticated multi-million dollar Data Center housed in our corporate office complex in Schaumburg includes an IBM 3081 running TSO, TCAM, MVS, SP1.3, and multiple CICS regions. These state-of-the-art technical resources and our progressive management team makes Zurich-American a company worth exploring. Consider the following opportunities:

PROJECT LEADERS

Several positions are available for individuals with at least 5 years Data Processing experience including project leader responsibilities. Familiarity with COBOL, BAL, JCL, OS/MVS, TSO/SPF, CICS, and PANVALET is required. A knowledge of insurance systems is highly desirable.

PROGRAMMER/ANALYSTS

Ideal candidates will have at least 2 years experience in design, debugging and implementation of programs and systems. A thorough command of PL/1 and COBOL is required. Familiarity with insurance applications or financial and reporting systems would be a plus.

As part of the multi-line, international Zurich Insurance Group, we can provide you with a very competitive salary and full fringe benefits, which include flex-time and summer hours. For immediate, confidential consideration, send your resume directly to Jane McGraw.



**ZURICH-AMERICAN
INSURANCE COMPANIES**
The Zurich Building
Schaumburg, Illinois 60196
An Equal Opportunity Employer M/F/H

WHAT RECESSION?

We are a data processing placement service staffed by data processing professionals with over fifty years of experience and affiliated with a national network of professional agencies. Our clients include a cross section of large and small companies in various industries, in the SUNBELT and throughout the country. Listed below are samples of our current requirements:

Sr. Programmer/Analyst - OS, COBOL & 4 yrs. IMS	TO \$38K
Sr. Programmer/Analyst - Burroughs 7800/6700 COBOL	TO \$33K
Sr. Programmer/Analyst - OS, PL/1 & IMS	TO \$35K
Sr. Programmer/Analyst - OS, COBOL & IMS	TO \$35K
Project Leader - LIFE INSURANCE & ALC	TO \$35K
Sr. Programmer/Analyst - 5+ years LIFE INSURANCE	TO \$35K
Data Base Analyst - 2+ years IMS physical and logical design, PSB & DBD, dictionary a plus	TO \$50K
Programmer/Analyst - MODCOMP, FORTRAN and ALC, realtime	TO \$30K +
Programmer/Analyst - DEC LSI-11, degree FORTRAN & PASCAL	TO \$42K
Programmer/Analyst - varied MICRO, 5+ years, Graphics, Networking	TO \$50K
Sr. Systems Analyst - Manufacturing or Finance, IBM	TO \$45K
Project Leader and Programmer/Analyst - DEC VAX, manufacturing or financial & degree	TO \$50K
Airline - Systems Programmer, 3+ years CICS, MVS	TO \$38K
V.P. Operations for small growing company which sells and installs telephone communications systems. Minimum 10 years experience. Good package, including car, Sunbelt location.	TO \$75K +
Systems Programmers - OS or DOS, CICS or IMS, NCP/VTAM and OS, Capacity Planning for MVS	\$OPEN
VAX 11/780 or 11/750, VMS, FORTRAN engineering/scientific or C ² experience. Several positions throughout the country including Florida.	TO \$35K +
SAUDI ARABIA - two clients with single and family status contracts. Requires degree, OS, IMS, COBOL and financial systems OR PDP 11/70 operations or programming experience. Management positions available for professionals with HEALTH CARE experience.	TO \$60K +



Call or send resume to:
Bob Williams
ROBERT SHIELDS & ASSOCIATES
1550 W. Bay Area Blvd., Suite 101
Friendswood, Texas 77545
713/488-7961

Arizona/California/Texas/Colorado/Florida SCIENTIFIC OR BUSINESS PROGRAMMERS

All fees and relocation paid. \$20-40,000

If you have a BSEE, BSCS, BS in Mathematics or Physics or equivalent, we need you right now.
For Business: OS/DOS/IMS/CICS/MVS/JES Prog/Anal/Systems/
Data Base. All large scale installations.

For Scientific: experience in the computer, communications, semiconductor, or aerospace/defense industries.

Your name, resume, and present employer will not be given out without your permission.

For sincere personal service, please send a confidential resume to:

Don Pullman (802) 274-5860
PULLMAN PERSONNEL

3033 North Central Ave., Suite 401, Phoenix, Arizona 85012

DALLAS

SOFTWARE ENGINEERS
Full interview/relo. expenses and fee paid by premier growth sub-branch for 3+ yrs. experience with DEC. or TANDEM Systems. Must have BSCS or BSEE. Salary to \$38K.

2720 Stemmons Frey, 1207f
Dallas, TX 75207 (214) 637-6360
**DATA PROCESSING
CAREERS**

FT. WORTH

SOFTWARE ENGINEERS
Our Texas clients have several openings for software personnel with MVS, VSE, CICS, IMS, Program Products, Tuning or Capacity Planning experience. Salaries to \$40K.

Suite 911, One Summit Ave.
Ft. Worth, TX 76102 (817) 336-4565
**DATA PROCESSING
CAREERS inc.**

SENIOR PROGRAMMER ANALYST

Leading Florida retailer is looking for an aggressive COBOL Programmer Analyst. Minimum five years experience in new program development required. NCR medium to large scale mainframe experience desired. Knowledge of Cincom TOTAL Data Base and NEAT/3 is a definite plus.

We offer the right individual a progressive growth environment and a competitive compensation package.

Qualifying applicants send resume with salary history today, in complete confidence. (305) 625-2681

JByrans

A Jack Eckerd Company
Human Resource Division
15600 Northwest 15th Ave.
Miami, Florida 33169
Equal Opportunity Employer

INSURANCE COMPANY DP MANAGEMENT

An excellent opportunity for an experienced DP Manager with strong leadership skills. Must have at least 15 years experience in successful scheduling, controlling and administrative management as well as state-of-the-art technical expertise.

This new position leading to a officer position will direct the activities of a 10 person department. Systems are interactive using a Prime 850. Company specializes in casualty insurance for the health care industry and because of its growth and potential, major emphasis is in new systems development. Excellent benefits and salary based on ability and proven performance. For more information, call Mr. E. H. Harton at 717-763-1422 or send a detailed resume, in confidence, with detailed salary history.

Phico

Pennsylvania Hospital Insurance Co.
Pennsylvania Casualty Company
415 Fallowfield Road
P.O. Box 53 Camp Hill, PA 17011

"NATIONWIDE"

COMMUNICATIONS GROUP

NETWORK PLANNING DATA/VOICE

E.D.P. GROUP:

D.B.A. (3+ yrs. IMS/ADF)
**SYSTEMS PROGRAMMERS
(all levels)**

CALL OR SEND RESUME:

Fortune
PERSONNEL CONSULTANTS

17744 Skyway Circle
Irvine, California 92714
(714) 754-0198

Bechtel

Computer Professionals -San Francisco-

Do you want to be at the forefront of Technology? . . . Then, you belong at Bechtel, a world leader in the engineering and construction industry. We have immediate openings as follows:

UNIVAC

Systems Libraries

Programmer/Analyst

Responsibilities: implement and support Bechtel and Sperry UNIVAC Processors such as COBOL, DMS, MAP, FURPUR, FORTRAN and FLIT.

Requirements: good working knowledge of COBOL or FORTRAN, OS/1100, ASM or MASM.

Communications Software

Programmer/Analyst

Responsibilities: analyze, correct and modify UNIVAC 1100 Communications Software.

Requirements: experience with CMS and TELCON internals, including dump analysis, coding, generating and testing fixes and new software features.

OS/1100 Systems

Programmer/Analyst

Responsibilities: analyze and correct system errors, develop modifications to UNIVAC 1100/OS, and test fixes and new operating systems levels.

Requirements: experience with OS/100 internals, UNIVAC 1100 Assembly language, and the ability to analyze system dumps; design, code and test fixes and new software features, and generate new operating systems.

IBM

IMS Systems Programmer

Responsibilities: install and maintain IMS software within an IMS/CICS environment; design IMS data base; customize IBM and non-IBM DB software; prepare technical documents; and monitor and tune IMS environment.

Requirements: experience in all aspects of IMS software and utilities; experience in IMS/DB systems programming in IMS, CICS, utilities, and in all related IMS interface software; knowledge of IMS/CICS and MVS Control block structure; experience with applications programming and design of complex IMS/CICS DL/I type interface software.

PERFORMANCE and CAPACITY ANALYSTS

Senior Capacity Analyst

Responsibilities: capacity planning for IBM 3033 and UNIVAC 1100 Series Systems, including monitoring, balancing, trend reporting and forecasting workloads.

Requirements: experience with JCL, FORTRAN, performance principles and hardware characteristics.

Senior Performance Analyst

Responsibilities: performance measurement of systems and subsystems (IBM 3033 and UNIVAC 1100 Series); data reduction and analysis (RMF, SMF, SAS, a CICS/PARS); data storage and retrieval analysis; software monitor development and use; and hardware development and use.

Requirements: in-depth understanding of performance tools and methodologies; and practical experience with hardware and software tools.

For confidential consideration, send your resume to:

Pat Mabutas
Bechtel Employment Dept. 46C-1B
P.O. Box 3965
San Francisco, CA 94119



Discover the Bechtel Experience.

An Affirmative Action, Equal Opportunity Employer

position announcements

position announcements

position announcements

position announcements

position announcements

CONTROL SYSTEMS ENGINEER for Advanced Applications

Here's something special for a creative control engineer with an M.S. EE degree.

It's an opportunity to work in a research environment on advanced control problems involving complex and sophisticated products. Typical of these products are gas turbine and internal combustion engines, people mover mechanisms, automation for manufacturing systems and others.

This may involve everything from the initial concept through final design. Frequently, it will require imaginative thinking at the cutting edge of current technology.

That's why strong capabilities are required in all the following areas:

- Modeling and Simulation
- Modern Estimation and Control
- Microprocessor-based Controls

There are important personal advantages in associating with the Research Center. Outstanding back-up services, close cooperation with leaders in other disciplines and adequate funding can speed accomplishment and recognition of talent.

For an immediate contact, call Mr. Marcin at (203) 727-7110. Or send your résumé (including salary requirements) to Mr. W. M. Marcin, United Technologies Research Center, Silver Lane, East Hartford, CT 06108.



**UNITED
TECHNOLOGIES
RESEARCH
CENTER**

An Equal Opportunity Employer

IBM Software Development

Corodale Inc. is one of the industry leaders in systems software for the IBM mainframe marketplace. We are a Boston based corporation and have over 500 customer installations in 12 countries worldwide. Corodale has grown steadily through the development and sales of our SYSTEM/MANAGER and VSAM Management product lines, offered to IBM users worldwide since 1978.

We are expanding our technical development staff and are looking for IBM systems programmers with a wide range of technical and communications skills. Overall responsibilities include both product development and customer support.

Specifically, the technical experience we require is at least 5 years of IBM assembler language programming with expertise in:

- DOS/VS(E) internals
- IBM file access methods
- I/O channel programming

Hardware operations. Also required are strong design and development skills and familiarity with the VM/CMS programming environment. Knowledge of foreign languages would be helpful.

If this profile sounds like you, and you want to make an immediate contribution to a fast-track software company, please send your resume to:

Personnel Director
Corodale Inc.
211 Congress Street
Boston, MA 02110



**Corodale
Incorporated**

**Systems
Software**

Give us your resume

We'll give YOU San Francisco!

Some people come to sail on the Bay, some to ski in the Sierras, and some to snorkel in Santa Cruz. But the professional climate is the real reason, and every bill is exciting.

There's nobody better qualified than CRG to introduce you to San Francisco. We've been here longer—over 10 years—know everyone in EDP worth knowing, and our list of client companies reads like the Who's Who of the business world.

Send your resume today, or call. All fees, interview, and relocation expenses are paid by our clients.

Computer Resources Group, Inc.
303 Sacramento St., San Francisco, CA 94111
(415) 398-3535 or 3333 Bowers Ave., Santa Clara, CA 95051,
(408) 727-1658



CRG
AFFILIATES IN 27
MAJOR U.S. CITIES



An employer-retained professional placement service

FLORIDA CICS SYSTEMS PROGRAMMER

One of the largest financial institutions in Florida based in Dade County is seeking an experienced systems programmer for Systems Gen. and maintenance of their IBM internal. Strong knowledge of CICS-DOS/VS or CICS/OS/VS, VTAM and SMP is essential. This is a large data center providing excellent benefits and good upward mobility.

Salary to \$30K



**ROBERT HALF
OF MIAMI, INC.**
2655 Le Jeune Road, Ste 814
Coral Gables, FL 33134
(305) 447-1757

SYSTEMS ANALYST An ACP/PAVS System

Analyze business procedures and problems to refine data and convert to programmable form for electronic data processing. Provide consulting services for company to airlines, hotel, other ACP/PAVS system users. Study existing data and handling systems to evaluate effectiveness, develop new systems to improve business effectiveness as required. Conduct special studies and investigations pertaining to the development of information systems to meet current and projected needs of clients. Two years college with major in math or computer science. Four years experience. Forty hour week. 8:30 a.m. - 5 p.m. M-F \$2,500/mo. Resumes only to: DENCOM INC., 1602 S. Parker Rd., Ste 312, Denver, CO 80231. Attn: Nels Pawley (303) 750-7417

MUMPS/MIIS PROGRAMMERS

Compuware, a leader in health care information systems, is seeking MUMPS/MIIS Programmers WITH MINIMUM OF 3 YEARS EXPERIENCE. Health care systems background desired. Must be willing to relocate. We offer highly competitive compensation and benefits packages to the right candidates. Send resume to:

Director of Personnel
COMPUWARE
8200 Greensboro Drive
McLean, VA 22102

Education & Training Director

Business application and utility software development and distribution company, with 3,000 customers, marketing over 40 products through an international network of over 300 consultants. We are establishing a new division to direct the planning, promotion and implementation of management level end user seminars. We are looking for a Divisional Director who has:

- Computer industry knowledge
- Broad business application knowledge
- Solid accounting background
- Past management experience
- Management level consulting experience

This is an excellent and unique opportunity for the right professional. Forward letter with work history to:

TCM
P. O. Box 66596, Seattle, WA 98166

Data Base Analyst

The hours are 40 hours per week, 8 am to 4:30 pm. Salary: \$18,102 per year. Requirements: Bachelor's of Science in Computer Science or equivalent, thorough knowledge of Macro-Level Assembler and COBOL programming languages. Duties: Design and maintain Data Base Management Systems for application software support of a hospital medical information system. Send resumes with social security numbers to: The Indiana State Employment Service, 10 North Senate Avenue, Indianapolis, IN 46204, Attention W. F. Shepherd, ID # 200954.

An Employer Paid Ad

PROGRAMMER/ANALYST

Fortune 500 mfg. division based in City of Industry, CA is seeking an aggressive self starter to be responsible for all programming to develop a complete manufacturing system on an IBM S/38 with minor conversion of systems currently installed on IBM S/3. Minimum of one year RPG II experience on a S/3 or S/34 required. College degree and S/38 experience a plus, but not required. Excellent programming skills are most important. High visibility and career oriented position. Excellent benefits. Salary commensurate with experience.

Send resume to:
H. H. Robertson
Arcadia Western Arch. System Div.
999 S. Hatcher Ave.
City of Industry, CA 91749
Equal employment opportunity MF may apply

STAFF SERVICES MANAGER (SHERIFF-CORONER)

To manage and supervise staff service functions such as data processing, budgeting, fiscal and business operations, management analysis, staff development, and program evaluation and review. Recruitment period 1/1/83 to 2/4/83 5:00 P.M. Applications may be obtained by contacting the Butte County Personnel Department, 25 County Center Drive, Oroville, CA 95965-3367, Phone: 916/534-4651.

AN EQUAL OPPORTUNITY EMPLOYER

DATA PROCESSING OPPORTUNITIES

FLORIDA NATIONAL SERVICE COMPANY, Florida National Banks of Florida, Inc., has several positions available at our Jacksonville, Florida location. Our growth has created opportunities for qualified Data Processing Professionals. We are presently seeking Systems Analysts/Programmers and Project Managers.

We offer an excellent salary and comprehensive benefits package and a liberal relocation assistance program.

If you have at least 3 years banking experience in a large IBM environment, COBOL, MVS, OS/VS, VSAM, CICS, IMS/VS, Assembler and you are seeking a challenge and opportunities for professional growth, send your resume and salary history in confidence to:

T. W. MONTGOMERY JR.
FLORIDA NATIONAL BANKS OF FLORIDA, INC.
P. O. BOX 689
JACKSONVILLE, FLORIDA 32201

An Equal Opportunity Employer

**WE PROMOTE
COMPUTER PEOPLE
VERY QUIETLY**

EXETER 2100

NATIONAL RECRUITING CONSULTANTS
(603) 926-6712



BRUCE A. MONTVILLE
MANAGING PARTNER

**TOLL-FREE
1(800) 258-7328**

COMPUTER PARK P.O. BOX 4979
HAMPTON, NH 03842

DECISION SUPPORT Computer Systems Analysts

Decision Support Systems will be a major career growth area in the 80's, riding the wave of the micro-computer boom. We represent clients nationwide seeking experienced DSS professionals with working knowledge of products such as EXPRESS, IFPS, EPS, CUFFS, etc..

CLIENTS WILL TRAIN IN DSS, computer systems analysts with an MS/MBA (preferred) and 2-5 years experience in business systems development in an interactive environment involving relational data bases. A unique opportunity for career development.

Call or write Tom Kubiak

HALBRECHT
675 Third Avenue, N.Y., N.Y. 10017 (212) 682-3333

COMPUTER SERVICES

Applications are being taken for the position of Academic Programmer/Analyst. Must have demonstrated ability in the areas of system design, user interface, and programming. Responsibilities include working with faculty members in the design and coding of academic systems, supervising the student terminal room, and assisting students on the computer. Salary range is \$13,200 to \$19,200 per year D.O.O.. Send resume and three letters of reference to Gary Dietz, Director of Computer Services, Whitman College, 345 Boyer Ave., Walla Walla, WA 99362 by 2/21/83. Resumes should address the following areas:

1. Educational background.
2. Experience in Fortran, BASIC and COBOL programming.
3. Experience in interaction with faculty and students in programming and trouble shooting.
4. Experience in teaching workshops and short courses.

Affirmative Action/Equal Opportunity Employer

LOOKING?

Find the job you want in Computerworld's classifieds. No other publication carries as many ads for computer professionals as Computerworld, so no other publication can give you as wide a choice of jobs, salary and location as Computerworld. You can even try a "Position Wanted" ad to look for exactly what you want, where you want.

Be sure you look over our recruitment ads every week, so you don't miss the opportunity that's just right for you.



COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Box 880, Framingham, MA 01701 (617) 679-0700

position announcements

position announcements

position announcements

position announcements

position announcements

Saudi Arabia

You can join a world-wide professional organization if your experience meets our high qualifications. HE International is a major provider of professional and technical manpower in Saudi Arabia. We are looking for Data Processing Professionals who are ready for challenging overseas responsibilities as:

PROGRAMMERS/ SYSTEMS ANALYSTS

Be involved in developing and maintaining systems in an IBM 370/303X environment. Many positions are available with projects in a variety of areas including payroll, cost accounting, pension plan design and engineering scheduling.

Requires 5 yrs. experience and expertise in one of the following groups of languages:

- Mark IV, PL/I, COBOL and UNIX* C
- FORTRAN, TSO/SPF, OS/JCL

Degree also required for most positions.

*UNIX is a registered trademark of Bell Labs.

You will be rewarded with an exceptional compensation package including annual bonus, travel allowance plus room and board. Please expedite resume to Dept. C, HE International. Interviews are regularly scheduled in major metropolitan areas. Our client requires U.S. Citizenship.



INTERNATIONAL, INC.
PO Box 255397
Sacramento, CA 95865

DATA PROCESSING

DATA PROCESSING POSITIONS.

Excellent opportunity to join a young and rapidly growing nationwide truck and trailer rental company, offering excellent starting salary and benefits along with rapid advancement.

IBM 3031 MVS OS/JCL VTAM IMS DB/DC JES2 TSO/SPF COBOL

MVS SYSTEM PROGRAMMER

Experience required in MVS/SP3, JES2, TSO/SPF, SMP4. Experience a plus in ACF/VTAM, ACF/INCP, UCC1, UCC3 and IMS software. Minimum 5 years experience in data processing.

IMS DATA BASE ANALYST

Solid background required in IMS Data Base design, implementation and IMS application development process. Good knowledge of IMS applications programming a necessity. Knowledge of IMS software a plus. Minimum 5 years experience in data processing.

SENIOR PROGRAMMERS

Experience required in COBOL, OS/JCL, IMS DB/DC, on-line a plus.

Agency referrals not accepted. Submit resume

to:

Jartran
Truck Rental

Equal Opportunity Employer, M/F.

Valerie Friedman
MIS Department
JARTRAN, Inc.
P.O. Box 343799
Coral Gables, FL 33134

EMPLOYMENT SERVICE FOR PROGRAMMERS AND ANALYSTS

National Openings With Client Companies
and Through Affiliated Agencies

Scientific and commercial applications • Software development and systems programming • Telecommunications • Control systems • Computer engineering • Computer marketing and support

Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide you decide.

RSVP SERVICES, Dept. C
Suite 700 One Cherry Hill Mall
P.O. Box 5013
Cherry Hill, New Jersey 08034
(609) 667-4428

RSVP SERVICES, Dept. C
Suite 211 Dublin Hall
1777 Walton Road
Blue Bell, Penna 19422
(215) 629-0595

RSVP SERVICES

Employment Agents for Computer Professionals

Computers

FEDERAL
SYSTEMS

SPERRY UNIVAC IS A DIVISION OF SPERRY CORPORATION

TO: PROGRAMMER/ ANALYSTS FROM: SPERRY UNIVAC FEDERAL SYSTEMS RE: EXCELLENT EMPLOYMENT OPPORTUNITIES

Are you a data processing professional experienced with Sperry Univac's commercial product line who is interested in exploring career options with an industry leader?

Specifically of interest are systems programming skills on the 1100 SERIES (OS/1100 or EXEC 8), 90 SERIES or System 80 (OS/3). Your technical background should reflect one or more of the following: Software installation; SYSGEN; Dumpbusting; Problem isolation & resolution; TELCON; TP; DMS; Communications software & protocols; Applications programming; Pre-1100; COBOL; Assembly; Applications programming writing; sales surveys & presentations; Technical proposal writing; Benchmarking.

Positions are currently available in the areas of Pre-Sales Technical Marketing Support and On-Site Technical Support. A wide variety of domestic locations are available, featuring both urban and rural environments. Relocation assistance is available. All positions require interpersonal skills appropriate for customer interface. Some positions require moderate travel.

If you possess the above skills, we are interested in discussing the technical challenges, professional training and career development offered at Sperry Univac. Call me at 703/556-5180 during business hours or send a resume in confidence to: Sperry Univac, Federal Systems, 8008 Westpark Drive, McLean, VA 22102. Attn: Staffing & Development. An Equal Opportunity Employer.

Very truly yours...

Deborah K. Kidwell
D.K. Kidwell
Technical Recruiter

SPERRY UNIVAC

The computer people who listen

COMPUTER SCIENCE CALIFORNIA STATE COLLEGE, STANISLAUS

One or more faculty positions with rank open in a newly formed Department of Computer Science. Experience in teaching is the primary attribute we seek in prospective members of the faculty. Positions are available in September 1983. The Ph.D. degree in Computer Science or closely related field is required.

CSCS is one of the campuses of the California State University, and is located in the San Joaquin Valley, 2 hours from San Francisco and 2 hours from the Sierra Nevada mountains.

Computing facilities available include our on-campus CYBER 170/720, PDP-11/45, and microcomputer laboratory, as well as remote access to the central CSU CYBER 170/760 in Long Beach.

Letter of application and resume should be sent to: Edward L. Lamie, Chair, Computer Science Department, California State College, Stanislaus, Turlock, CA 95380, (209) 667-3185. Application deadline is February 25, 1983.

CALIFORNIA STATE COLLEGE, STANISLAUS IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION/TITLE IX/SECTION 504 EMPLOYER.

CENTRAL NEW YORK STATE

CONSULTANT \$45,000
National firm MAS consulting background with emphasis in mfg. computer systems.

SENIOR EDP AUDITOR (40,000)
Large scale IBM exposure. Progressive organization.

MGR TECH SUPPORT \$40,000
OS/MVS, IDMS, CICS shop. Create function, including performance measurement, etc.

ROMAC

One Marine Midland Plaza
Rochester, NY 14604
(716) 232-4610

A Network For Success... SCT!

Your time has come to have the recognition, challenge and growth your talents deserve. With a phenomenal growth rate of 30% annually and unmatched expertise in software development and computer center management for higher education and the local government, Systems & Computer Technology Corporation is the ideal place to fulfill all your career goals.

Our challenging new technological ventures of tomorrow require the top professionals today. We seek accomplished individuals with the creativity, new ideas and vitality to achieve with us. The following positions are available at our Corporate Headquarters and at many of our site locations:

- MIS Directors
- User Liaisons - Student, Financial or Government Systems
- Systems Programmers - IBM, Honeywell, DEC or CDC
- Programmer/Analysts - COBOL + 2 yrs. experience

Structure new career success...NOW! Call COLLECT, Manager of Recruiting, (215) 647-5930, or send your resume to: Systems & Computer Technology, Dept. 2, Great Valley Corporate Center, 4 Country View Rd., Malvern, PA 19355.

**Systems & Computer
Technology Corporation**

An Equal Opportunity Employer M/F



SCT ON THE GROW

position announcements

position announcements

position announcements

position announcements

position announcements

UNIX™ System Software Engineers

Tektronix is developing advanced products built around the UNIX™ operating system in the Design Automation Information Display Group.

We need project leaders and software design engineers with a strong background in the UNIX™ kernel to lead us in the following projects:

- system porting
- real-time extensions
- file system enhancements
- device driver development
- user-interface enhancements

Tektronix offers exciting technical challenges in an environment rich in professional growth opportunities within the scenic wonders of the Pacific Northwest.

If you are ready for the challenge, please call Susan Sorber collect at (503) 629-1604 or send a resume to Tektronix, Inc., Walker Road Industrial Park, MS 94-321, P.O. Box 4600, AER1, Beaverton, Oregon 97075.

LOOK FOR US AT UNICOM IN SAN DIEGO, JANUARY 25-27!

We are an equal opportunity employer m/f/h.

™ of Bell Laboratories

Tektronix
COMMITTED TO EXCELLENCE

HOUSTON EDP OPPORTUNITIES IN THE ENERGY INDUSTRY

Salary range \$35,000 - \$50,000

Our client, one of the world's largest oil and gas companies, is currently expanding its Houston IBM 3081 data center. If you are degreed with several years experience in any of the following areas, send your resume today.

MVS INTERNALS
GRAPHICS (SAS, PGF-GDDM, TELLEGRAH, DISPLAY)
LIBRARY SUPPORT (PANVALET)
CAPACITY PLANNING (SAS)
SECURITY SOFTWARE (ACF2)
DATA BASE ANALYSIS (IMS)
PL1 PROGRAMMING/ANALYSIS
QUALITY ASSURANCE
COMMAND LANGUAGES (COPIES, LISS, TMAPS, MAPS)

In addition to a very competitive salary and benefits package, all interview expenses will be picked up and the firm offers a home sale and mortgage differential assistance policy.

For further information, call Cliff Reilly or Gaylynn Lieb at (713) 658-9898.

ALL FEES ASSUMED BY CLIENT COMPANIES.

M. DAVID LOWE PERSONNEL SERVICES

6117 Richmond Avenue
Houston, Texas 77057

RETAIL SYSTEMS MANAGER

A growing national specialty retail chain based north-west of Boston has an outstanding opportunity for an experienced Systems Professional. The ideal candidate will have 5-10 years proven experience in the development and implementation of manual and automated systems in a retail environment. A data processing background and hands-on experience in the design and installation of systems, forms, procedures and user manuals is a must. P.O.S. experience a plus. Candidates must be logical, creative and possess excellent communications and interpersonal skills. Send your resume with salary history, in confidence, to:

Vice President-Finance
CW-B4061, Computerworld
Box 880, Framingham, MA 01701
An Equal Opportunity Employer M/F

PROGRAMMER ANALYST

to \$32K
Our clients, major financial institutions located in North and Central Florida are in immediate need of 14 aggressive P/A with varied banking applications experience. These are expanding IBM OS-MVS installations offering rapid career development for the professional who wants an opportunity to show what he can do. Excellent benefits, relocation paid if you want to relocate to Florida Sunbelt or any area in the United States and have experience in Banking, Insurance and Manufacturing CALL COLLECT or send resume in confidence to:

Dunhill

Executive Search
of Greater Miami
633 N.E. 167th St., Ste 612
North Miami Beach, FL 33162
(305) 653-2535

MEDICAL D.P. PROFESSIONAL SR. SYST/ANALYST PROGRAMMER

Get involved on the ground level of a large hospital information system. On line systems developed using PCOS, DLI, CICS in a VM/VSE environment. Hardware is IBM 4341-II and 3071/58.

Minimum 3-5 years experience preferably in a medical facility. 500 bed fully accredited hospital located in Central Texas. Excellent benefit package along with outstanding opportunity for a permanent career.

Send resume to: Mildred Lewis
Scott & White Hospital
2401 S. 31st
Temple, Tx. 76708
(817-774-2529) EOE

CITY OF APPLETON Program/Systems Analyst

Work involved developing new and updating existing programs and systems and training users on new programs and equipment. Position requires 2 to 4 years experience in data processing and/or systems analysis and a thorough knowledge of principles and practices of on-line computer systems. Successful candidate must be user-oriented. Salary range \$19,682 to \$25,116 plus an excellent fringe benefit package. Please submit complete resume and salary requirements no later than February 7, 1983 to: Personnel Department, 200 North Appleton Street, Appleton, WI 54913.

An Equal Opportunity Employer

University of Missouri/Columbia Extension Division

Training of the Disabled
in Computer Programming
(TODCOMP)
Instructor Wanted

To teach BASIC and structured COBOL. Prefer IBM and DEC experience. Definite plus JCL, Mark IV, SAS, Data Base Management Degree in Business. Computer Science or related field. Master's preferred, however equivalent experience in data processing will be considered. Application deadline February 25, 1983. Send resume and references to:

Dr. Ronald S. Wilson

TODCOMP

Route 4, Box 199

Columbia, MO 65201

(314) 449-3481

Equal Opportunity Employer

DP MANAGER

National company seeks exp. Programmer/Analyst or DP Manager with heavy (18 month min.) IBM 38 exp. Individual will be responsible for maintaining current operations and developing and implementing new applications. Excellent company offers 2 raises, 2 bonuses a year plus company paid medical, dental and profit sharing. Salary ranges from \$35K-\$40K depending on experience. Send resume and salary requirements to Mr. Pute, P. O. Box 18736, Memphis, TN 38118.

SYSTEMS PROGRAMMERS HONEYWELL

Operating & Communication Systems Software Internals

GCOS-III GMAP GRTS-III 385MAP
We are a computer consulting and software development firm seeking professional staff with 2 or more years experience. Challenging technical and growth opportunities. Excellent salary and benefits. Call or send resume and salary history to:

GALLER ASSOCIATES, INC.

1000 Wilson Boulevard

Suite 2105

Arlington, Virginia 22209

(703) 525-9292

PRINCIPALS ONLY EOE

FACULTY POSITION IN COMPUTER SCIENCE

Applications are invited for two (2) tenure-track full-time undergraduate teaching positions in computer science, starting August 1983. Rank and salary dependent upon experience and qualifications, up to \$35,949 for standard nine-month contract. Master's degree in computer science required. Ph.D. in computer science preferred. Business, industrial or teaching experience required. Applications accepted until positions are filled. Send vita, including unofficial transcripts, and letters of recommendation to Prof. Ralph E. Kuhn, Chairman, Computer Science Search Committee, Lock Haven State College, Lock Haven, PA 17745. An affirmative action equal opportunity employer.

SAN DIEGO CITY SCHOOLS Computer Services Specialist

Salary \$30,348 to \$38,736

Applications are being accepted for the above managerial position. The position is responsible for planning, organizing, and directing city schools' student records section in the data processing department. Successful candidate will possess: Combination of training and experience equivalent to Bachelor's degree in Information Systems, Business, Public Administration, Education, or related field; experience in a large scale computer environment; and considerable supervisory experience. Experience with automated student records systems is required. Submit detailed resume to:

Personnel Administration Department

San Diego City Schools

4100 Normal Street

San Diego, CA 92103

(619) 293-8152

Application materials and position description will be provided to applicants for completion and return. Must receive application or resume by 2-7-83.

CONTRACTORS

SKILLED IN FINANCE OR PERSONNEL DATA BASE SYSTEMS

NOW STAFFING
FOR LONG TERM ASSIGNMENTS
STARTING 1ST & 2ND QTRS. '83

Send Resume to:
DP CONTRACT ASSOCIATES
4151 S.W. FREEWAY, Ste. 450
HOUSTON, TX 77027

PROGRAMMER/ANALYSTS & PROGRAMMERS Upstate N.Y. Area

For these outstanding opportunities, our client requires 2-6 years' experience on large IBM mainframes and a knowledge of PL/I and CICS, while TSO ability would be an advantage. Salaries are fully commensurate with your background, in a state-of-the-art environment with the latest equipment and systems. Please send your resume to Tom Williams.

SD

Staff

Dynamics, U.F.

Personnel Consultants

110 Post Rd., Darien, CT 06820 (203) 655-5165

COMPUTERWORLD- The Recruitment Connection...

...the best connection to have when you are looking for quality computer professionals. There is a good reason why COMPUTERWORLD is the number 1 computer industry trade newspaper. No other newspaper of its kind can give you the broad exposure that you will get by advertising in COMPUTERWORLD. It is read by over half a million people, most of them top-notch professionals with top-notch computer companies.

COMPUTERWORLD publishes every Monday and the deadline for receiving your advertisement is always ten days prior to the issue date desired. The open line rate is \$8.05 per line with a minimum size of 2 column inches. Send in either camera-ready material or cleanly typed copy with a layout if desired. We also have a telecopier service and a team of adtakers who will gladly take copy over the phone.

Our mailing address is COMPUTERWORLD, Classified Advertising, 375 Cochituate Road, Box 880, Framingham, MA 01701.

If you want more information, call Alfred J. DeMille, our National Recruitment Sales Manager, at 1-800-343-6474 or, in Massachusetts, (617) 879-0700.



COMPUTERWORLD.
The best connection to have.
The only connection
you'll need.

position announcements	position announcements	position announcements	position announcements	position announcements				
<h2>EDUCATION</h2>	<h2>PUBLICATIONS</h2>	<h2>POSITIONS WANTED</h2>	<h3>PROGRAMMERS-ANALYSTS LEARN CICS</h3> <p>Take this opportunity to increase your marketability and keep up with state-of-the-art skills. This is the course that will help you acquire the CICS skills the industry is now demanding. For the nominal cost of \$450 we offer you:</p> <ul style="list-style-type: none"> A staff of trained professional instructors Instructors fluent in Spanish, Russian, Greek and French Especially designed 18 hour intensive comprehensive classes Convenient evening sessions 6-9 pm tuesdays and thursdays A course text book for future reference Hands on experience <p>Prepare for your initial CICS assignment-call today Mastercard and Visa excepted 1-800-345-8112</p> <table border="0"> <tr> <td>Session 2 February 8, 10, 15, 17, 22, 24</td> <td>Session 3 March 1, 3, 8, 10, 15, 17</td> <td>Session 4 March/April 22, 24, 29, 31, 5, 7</td> </tr> </table> <p>Information Management Consultancy Inc.</p>	Session 2 February 8, 10, 15, 17, 22, 24	Session 3 March 1, 3, 8, 10, 15, 17	Session 4 March/April 22, 24, 29, 31, 5, 7	<h3>PROGRAMMING CONTRACTS</h3> <p>To \$350 Per Day As An Independent!</p> <p>The newsletter CONTRACT PROGRAMMER contains solid contract leads each month, plus instructions on how to locate and win more contracts, market and promote yourself, write legal contracts, protect yourself and your programs, increase your income, organize your part or full time business, reduce your taxes, and much more. You cannot afford to be without this essential and inexpensive business tool \$12 per year or \$21 for a 3 month trial. Send check or MC/VISA number and expiration date. Subscribe Now!</p> <p>CONTRACT PROGRAMMER Box 813-E Vienna, VA 22180</p>	<h3>BUSINESS IS BASED ON PROFIT</h3> <p>This is the policy of your enterprise.</p> <p>There are more and more foreign computer companies coming into the West-German market. They are not only attracted by the third biggest DP potential but also by the opportunity to open up other marketing regions with the help of good German references.</p> <p>The objective of your firm is the winning of market shares by offering a product line tuned to market and future demands. In my capacity as a:</p> <p>SALES MANAGER, MARKETING MANAGER</p> <p>I am offering my assistance in achieving this goal.</p> <p>My professional background: 13 years experience in international EDP marketing e.g. in the management of peripheral computer units remote data processing A.S.F., terminal systems, IBM based package software.</p> <p>Soliciting of important customers and serving major groups of companies. Every year 100% club member. Qualities in leadership and motivation of employees on the road to success.</p> <p>Reply to: CW-8348 Computerworld Box 880 Framingham, MA 01701</p> <hr/> <p>DYNAMIC SALES TRAINEE Ambitious, creative, assertive, self starter, multi talented, seeks growth opportunity. Salary or draw only, N.Y.C., Tri State area.</p> <p>Mr. David Lessoff c/o Morrison 26-75 Henry Hudson Parkway Riverdale, N.Y. 10463 (212) 543-4469</p> <hr/> <p>NCR - ENVIRONMENT 5+ Yrs. Management Available in Systems (B1, B3, VRX) and/or Operations. Experience includes Financial, Insurance, Mfg. Permanent Southeast Location Preferred.</p> <p>Reply to CW-84028 Computerworld 375 Cochituate Rd., Box 880 Framingham, MA 01701 or call (713) 442-3390</p>
Session 2 February 8, 10, 15, 17, 22, 24	Session 3 March 1, 3, 8, 10, 15, 17	Session 4 March/April 22, 24, 29, 31, 5, 7						

BUY•SELL•SWAP

IBM

Series 1	4331
S/34	4341
5110	Tape
	Disk
	3270's
	3741's

800-328-3884 612-339-3042

MARKS COMPUTER SALES

1614 Harmon Pl., #210 • Minneapolis, MN 55403

Sale or Lease

Available

- 3081 K 24x24 July
IBM
W/3082, 3087, 1850,
2x1851, 3278
- 3081 K 24x24 Sept.
IBM
W/3082, 3087, 1850,
3278, 2x3274/21D
- V8 16x16 Immed.
AMDahl

Call or write: Dick Hatton
or Jed Hargrave
(301) 986-0800

FEDERAL DATA CORPORATION

4601 North Park Avenue
Chevy Chase, Md. 20815

IBM

3270

PRINTERS, TERMINALS & CONTROLLERS

Please Call: (312) 943-3770

Forsythe/McArthur Associates, Inc.
919 North Michigan Avenue
Chicago, Illinois 60611

Dealers in: IBM PROCESSORS/ PERIPHERALS

3350	ALL MODELS IMMEDIATELY AVAILABLE
3370	NEW AND USED 30-120 DAYS
3375	NEW 30-120 DAYS
3380	NEW 30-120 DAYS

— SELL OR LEASE —

ALSO AVAILABLE:

4331 Systems	Used-Immediate
4341 Systems	New and Used-Buy and Sell
Series 1	Want to Buy Any Model
System 3	All Models-Best Buys
System 32	Several-Immediate
System 34	Large and Small-Immediate
System 38	New and Used
3880	Mod 1-2-3 30 Days
3278	Mod 2-Immediate
3279	Immediate
3287	Mod 1 and 2-Immediate
3350	Several-For Lease-Immediate
3340	A2 and B2-Immediate
3344	Several Available
3411/3410	Several Available
3420	Most Models
3741/3742	Several Available

data3

computer corporation
11000 Prairie Lakes Drive
Suite 600
Eden Prairie, MN 55344

Call Toll Free
1-800-328-7938
or 612-941-9495 collect

☆☆☆☆☆☆☆☆☆☆

BUY ■ SELL ■ LEASE

PURCHASE / LEASEBACK

All IBM Equipment

Call FREE 1-800-527-6438

FRONTIER

COMPUTER CORPORATION

4575 S. Westmoreland • Dallas, Texas 75237

214-330-7243

MEMBER
AMERICAN
SOCIETY OF
COMPUTER
DEALERS

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

Smart idea. IBM products at a Dataserv price.

Dataserv can deliver more IBM equipment at lower prices and lower lease rates

Guaranteed.

Companies of every size are saving thousands, yes, even hundreds of thousands of dollars on their IBM equipment. How? By leasing and/or buying from Dataserv.

We're world-wide and we're stronger than ever and working harder than ever to earn your business. We specialize in new and used IBM computers — Sys/34's, 38's, 4331, 4341, 3033, 3081, 3083 and all IBM peripherals.

For immediate details on all the Purchase, Lease and Purchase/Lease Back plans offered by Dataserv call our toll free number.



"We made a decision several years ago to do business with Dataserv. Since then Dataserv has provided us with more than two million dollars worth of equipment. We have enjoyed excellent savings with every single transaction. Dataserv is a remarkable company and a good source for us."

Robert M. Horton, Sr. Vice President
Trusco Data Systems, a division of
The Trust Company of Georgia
Atlanta, Georgia



dataserv

509 Second Ave. So. Hopkins, MN 55343
TOLL FREE 800/328-6729
In Minnesota call collect 612/933-2575

Lease • Sale • Purchase • Maintenance
Saving you money on your IBM investment

**S/38
S/34
Series 1
System
3-32**

**Buy...
Sell...
Lease...**

- Immediate availability
- 5224 & 5201 • Upgrades
- Short term leases • Trade-ins
- Guaranteed IBM maintenance



**The Datacomp
Leasing & Service
Group, Inc.**

1-800-323-3289

Chicago 312/448-4300 New Jersey 201/467-8686

**IBM UNIT RECORD EQUIPMENT & DISK DRIVES
DISK PACKS, DATA MODULES, MAG. TAPE, DISKETTES**



SALE OR LEASE

machines

026—029—082—083—084
085—087—088—129—514
519—548—557—3330—3340



disk packs

2316—3336(1)—3336(11)—3348(70)
5 MEG. TO 300 MEG. PACKS—NEW & USED
Highest Prices Paid for Used Packs & Machines



THOMAS COMPUTER CORPORATION

5633 W. Howard St. Chicago, IL 60648
800-621-3906 312-647-0880
Authorized Distributor—Memorex, CDC, 3M, BASF, Verbatim

* LIQUIDATION SALE *

Lunday Thagard Oil Co. is liquidating its entire Irvine Ca data processing facility - all equipment will be available for inspection and will be sold on a closed bid basis on or before Feb 14, 1983.

- DEC System/communications - PDP 11/70 SYSTEM with 512 kb memory (5 bay) - PDP 11/60 SYSTEM with 256 kb memory and 2 RK06 drives - LSI 11 systems and modules - VT100s, Decwriters and Soroc arts - Diablo and Printronix printers - Halcyon network chassis, 8 & 16 channel Vadic multiplexors - Herman Miller hanging wall units - emergency power distribution center.

- Graphics systems - Dicomed D48 high resolution graphics recorder - Evans and Southernland picture 1 system - Ramtech Color graphics system and monitor. All modules interface to the PDP11 system.

- Contact for information - Please direct any inquiries to Mr. Kim Lombard (714) 645-9456 or (213) 548-6464 for information and a bid package.

**We Buy & Sell
DEC
Systems
Components**

Digital
Computer
Resale

call: 713
445-0082
600 Kinross Ste C22
Houston, Tx 77060

**DEC
RK07-EA
Disk Drives
Save
Up to 65%
New \$7,900
Used \$4,900**

Guaranteed Eligible For DEC Maintenance

DATALEASE

800-854-0350
Anaheim 714-632-6986
San Jose 408-287-7338

* Registered trademark of
Digital Equipment Corp.

**WANTED TO BUY
4341M2**

Contact Mike Kennedy
Leasing Dynamics
1717 E. Ninth St.
Cleveland, OH 44114
216-687-0100

DLR

**FOR SALE
(3) DEC PDP 11/23
Systems
256KB Each**

Includes: 10MB RL02 Disk Drives,
LA120 Printers, Okidata Printers,
VT100 Display Stations, Tac Se-
lective Print Microboards and box-
es...AND MORE.

For details contact:
Associated Grocers
(602) 269-5200 Ext. 5239

FOR SALE

**Toyota Motor Sales, U.S.A., Inc.
TEXAS INSTRUMENTS
(TI742) TERMINALS**

1200 BPS Integral Bell
Compatible Modem

QUANTITY AVAILABLE

CONTACT AL REES
(213) 618-4004

HONEYWELL

DUAL 66

Total Redundancy Includes

DUAL PROCESSORS

DUAL SCU — 512KW

DUAL IOM

Also 1 MSP, 1 URP & CONSOLE

USE YOUR PERIPHERALS

\$60,000 Total

CALL OR WRITE:

PHOENIX NEWSPAPERS, INC.

ATTN: DALE BERRY

120 E. VAN BUREN

PHOENIX, AZ 85004

602-271-8500

**UNIVERSAL MEMORY
IBM 3000 Series
or AMDAHL**

4 Megs - STC
Lease Only
Available Now

Leverage Leasing, Inc.
(201) 232-6255

INDEPENDENT DP APPRAISALS & FORECASTS

- Fair Market Value Studies
- 7 Year Residual Value Forecast
- Re-Leasing Value

By International Data Corporation (IDC), the nation's foremost market research firm specializing in the information processing industry. Will provide appraisals and forecasts suitable for investments, liquidation, tax or insurance purposes.

Contact:
Leasing Planning Service
International Data Corp.
5 Speen St.
Framingham, MA 01701
(617) 872-8200



Take the
shuffle
out of the
search.
Subscribe
to the
Computer-
world
Index.

[For details, call or write
our Circulation
Department]



buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

BUY
SELL • LEASE**DISK**3340 • 3344
3350 • 3380**TAPE**3411 • 3410
3420Call Bob Ford
or Nelson Johnson**S/38****S/34****S/3****SERIES/1**Call Gayle Drotar
Roger Odom
Ken Winzen**370 Systems**4341 • 4331
3031 • 3032
3033 • 3081Call Jack Harvey
or John Bottom**NEED TO REDUCE
EXPENSES?****ECONOCOM'S
PURCHASE-LEASEBACK
PROGRAM CAN PRODUCE
IMMEDIATE SAVINGS ON
YOUR PRESENT
EQUIPMENT—CALL FOR
DETAILS.****ECONOCOM**
1755 Lynnfield Road
P.O. Box 17825
Memphis, Tennessee 38117
901-767-9130**System
34 or 38**After you decide on IBM,
take delivery of your
computer system or
upgrades from
Datacomp.

- Significant Savings • Trade-In Allowance • Guaranteed Full IBM Support • You pay only after installation and IBM accepts the equipment under maintenance • Fortune 500 references

Can you believe lease terms better than IBM?

- New Tax Lease
- Purchase/Lease Back
- Check IBM's New Plan A & B... then call Datacomp

**The Datacomp
Leasing & Service
Group**1-800-323-3289
New Jersey 201/467-6686
Chicago 312/448-4300
Call Collect**COMDISCO®****Your First Choice**
In The Second Market**IBM PROCESSORS**☐ **3081** Available Now
(D/K's) Will Lease/Finance
Yours Or Ours☐ **3083** (E/B/J's) Will
Lease/Finance
Yours Or Ours☐ **3033** Available Now (N/U/AP's)
Short Term Leases☐ **3032** Available Now
Sale/Short Term Leases☐ **3031** Available Now
Sale/Short Term Leases☐ **4341** Buy/Sell/Lease☐ **All 370's** Immediate
Availability Sale/
Month-To-Month
Leases☐ **Amdahl** Short Term
Subleases Available☐ **Memory/
Channels** For All Models
Immediately
Available**IBM PERIPHERALS**☐ **3880-1/3830-2** Immediate
Availability☐ **3350/70/75** Immediate
Availability☐ **3880-2/3880-3** 30-45 Day
Availability☐ **3380 A4/AA4** 30-45 Day
Availability**3380 B4**☐ **3330/40/44** Immediate
Availability☐ **3803-1/2** Immediate
Availability**and all models of
3420's**☐ **3705/04** Call
Karen Johns☐ **327X CRTS** Call
John Christopher
312-698-3000**We Can Put It Together****Eastern Regional Headquarters**(Connecticut) 203-655-1211
Boston 617-542-4005
New Jersey 201-568-9666
Philadelphia 215-545-8035
Washington, D.C. 301-441-1000**Midwestern Regional Headquarters**(Chicago) 312-698-3000
Michigan 313-644-1500**Western Regional Headquarters**

(San Francisco) 415-944-1111

South Central Regional Headquarters(Dallas) 214-258-6444
Fort Worth 817-534-1774
Atlanta 404-256-5956
Florida 305-428-3177**Canadian Regional Headquarters**

(Toronto) 416-968-7135

International Headquarters(Chicago) 312-698-3000
Latin America 305-666-6258
Paris (1)524 5270
Switzerland (21)71 09 35
West Germany (2434) 5048**Corporate Headquarters**6400 Shafer Court 312-698-3000
Rosemont, IL 60018 TWX 910-253-1233

A MEMBER OF CDLA AND LISTED ON THE NEW YORK STOCK EXCHANGE

**WE BUY • SELL •
AND LEASE IBM****SYSTEM/34 & 38**

- CPU's • CRT's
- PRINTERS

- Many in Stock

- Short Term Leases

- Rentals

- Purchase/Leaseback
3741/3742 • All Models
- Printers (3715/3717)

Pearl Computer Division
P.O. Box 24026 • 4717 Centennial Bl.
Nashville, TN 37202**Barry Tessler (615) 383-8703****3083-E16
4341-L11
4341-M12****Controllers
3880 3830
3803**

Immediate Delivery

Control Units**3274 3272****3276 3271**

Immediate Delivery

**L1-M2
UPGRADE 3/19/82****WANTED**4341 Grp 1 or 2
For Outright Purchase
Or Purchase-Leaseback
Short or Long Term**DASD****3380 3375 3370****3350 3344 3340****3330 3310**

Immediate Delivery

**We Buy, Sell
& Lease IBM****Processors and
Peripheral Equipment**

Contact Bernie Gest 215-782-1010

Computer Marketing Inc.

7704 Seminole Ave., Philadelphia PA 19126

**Tape Drives
3420
3410 8809**

Immediate Delivery

**Printers
3287 3289
3203 3211
3262 1403****Display Stations****3278 3277**

Immediate Delivery

CDLA

buy sell swap	buy sell swap	buy sell swap	buy sell swap	buy sell swap
 <p>1-800-328-7000</p> <p>In Minnesota (612) 894-4020</p> <p>Your DEC Hot Line to the lowest prices nationwide!</p> <p>MSI MIDWEST SYSTEMS, INC. 12117 Riverwood Drive, Burnsville, Minnesota 55337</p>			<p>DEC COMPLETE SYSTEM PURCHASE OR LEASEBACK DEC 2020-DA INCLUDES KS10 CPU DZ11-AA 256K OF MEMORY TU45 TAPE DRIVE 2 RM03 DISK DRIVES 1 LP20 PRINTER 2 DECWRITER 11 9 VT100 DISPLAY TERMINALS AND MANY EXTRAS--- CALL JOHN MYATT AT 617-787-5700</p>	
			<p>QANTEL SYSTEM 345 w/256K Memory, 90MB Sealed Disk Drive, 4 Terminals, (2) 300LPM Band Printers, Includes Advanced Operating Systems and Report Generator Software, For Lease or Sale. Call (213) 451-4547</p>	
			<p>DEC VAX 11/750 AVAILABLE • RGM 80 • 1 MB Memory • LA38, DZ11A • VMSV3.0 license and binaries • DEC maintenance • \$80,000.00 Computer Covenant Corp. Farmington, CT 06032 Call: 203-677-6563</p>	
			<p>3211/3811 For Sale or Lease Avail. Immediately GTEX (214) 783-1212</p>	

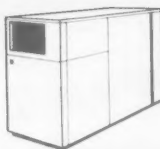
IBM SYS/34 - IBM DISPLAYWRITER

- BUY—SELL—LEASE**
- IMMEDIATE DELIVERY
 - SHORT TERM RENTALS
 - GUARANTEED SAVINGS
 - GUARANTEED M/A
 - PERIPHERALS
 - UPGRADES

Call ...

MARION

(1-800) 631-1914
(201) 343-4554
(203) 758-2409



84 KENNEDY STREET
HACKENSACK, N.J. 07602

CASH PAID NOW

New **DEC*** Used

VAX • 11/70 • 11/44 • 11/34 • 11/23
RA80 RM05 RP06 RL02

We BUY and SELL all DEC
CPU's • SYSTEMS • COMPONENTS
MEMORY • TERMINALS

Outside California
CALL TOLL FREE 800-854-0350



The **DEC** SPECIALISTS

In Calif:
714-632-5986
P.O. Box 6086C
Anaheim, CA 92806

* Registered Trademark of Digital Equipment Corporation

HONEYWELL SUBLEASE

Honeywell DPS 8/70 Configured As Follows:

CPU8187
CMM8012
MXC8001

18-36 MONTH SUBLEASE
AVAILABLE IMMEDIATELY
ATTRACTIVE RATES
PRINCIPALS ONLY

Reply to CW-B4064
Computerworld
Box 880, Framingham, MA 01701

BUY-SELL-LEASE

SERIES/1

S/34

S/38

4300

ALL RELATED PERIPHERALS

DATAMASTERS

IBM DISPLAYWRITER

Call toll-free 800-328-5718
(In Minnesota, 612-544-8660)
COMPUTER SYSTEMS, INC.
100 West 10th Street
Minneapolis, MN 55410



PRIME COMPUTER USERS

New 80 and 300 megabyte drives
Available for immediate delivery.
300/1440 LPM Printers
also available.
Nationwide CDC maintenance
and financing.

Call Barry Decks
Timesharing Services Inc.
(904)396-7068

There's No Time For DOWNTIME!

So while the industry works on your system's problems, let us work on your business problems. Advertise in—

One insertion will let a potential audience of over a half a million readers know what you are looking for or have to offer. Whether you are looking to recruit computer professionals, want to buy, sell or lease equipment, have computer time or services to offer, or software packages to sell, and more, Computerworld Classifieds will help you get a lot of exposure and get things done faster.

The open line rate is \$8.05 per line and there is a minimum size of 1 column by 2" at a cost of \$225.40. We can accommodate up to 5 columns and depth measurement increases by half inch increments.

Ads may be mailed in, cleanly typewritten, with a letter stating the size desired and the issue in which it is to be run. Our team of adtakers will take ads that require no artwork or borders over the phone. We also provide telecopier service.

Any borders, logos, or artwork should be sent in with your ad and must be dark and clear enough to be reproduced.

Computerworld comes out every Monday and our deadline for receiving ads is 10 days (or six working days) prior to the issue date desired.

First time advertisers must send payment along with their first ad.

Our mailing address is:

COMPUTERWORLD CLASSIFIEDS!

Classified Advertising
Computerworld
Box 880
375 Cochituate Rd.
Framingham, MA 01701

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

SYSTEMS

4341 4331

38 34

32 3

BUY • SELL • LEASE

COMPUTER
BROKERS, INC.
2978 SHELBY ST.
MEMPHIS, TENNESSEE



TOLL-FREE

800-238-6405

901-372-2622

PERIPHERALS

3203 3370

3340 3411

3350 3420



C.D. SMITH &
ASSOCIATES, INC.
DEC computer systems & components
1304 LANGHAM CREEK DRIVE, SUITE 124
HOUSTON, TEXAS 77084
713-578-8464
TELEX: 76-2547

DEC

We Are Buying VAX 11/780, RL02-AK,
DMR11-AE

WE ARE SELLING: VAX Components,
DW780, H9602-HA, MS780-CC,
H7112, DEC 2060 System

MU11-BA	\$2,250
Centronics 600 LPM	3,500
RK06 (2) Ea	1,000
11/34 CPU	3,000
RP04-AA	2,000
11/34A-YE	4,400
TU10 Slave 7 Track	1,000
FP11-A	1,900
DD11-DK	500
11/05-NC	1,200
11/05-SC	2,500
BA11-KE (New)	2,800
BA11-KE's (2) Ea	1,500
BA11-KW	3,300
DB11-A	525
DP11-A	95
DR11-C	325
FP780-AA	9,350
KE11-A	600
KE11-B	350
KG11-A	500
KY11-LA	125
LA36	450
MM11S	250
RH11-AB	4,000
RH70 (2) Ea	1,705
RK611 (CII)	3,300
TM03	2,000
BA11-LE (New)	1,200
RP06 (As Is)	7,000
TU77-AF	13,000
TE16 (Mstr. H9602)	9,000

If you want on our mailing list
ask for Connie
713-578-8464

SALE OR LEASE

IBM

3777

RJE

NF
COMPUTER
SALES &
LEASING CORP.
950 York Road
Hinsdale, IL 60521
(312) 920-8181

HOW TO SAVE \$30,000 PER MONTH ON A 3083 LEASE.

Lease the same 3083 that IBM leases for over \$92,000 per month from Randolph—for less than \$62,000 per month. That adds up to savings of \$1,440,000 over a four-year lease period. If you're renting an older machine, Randolph may save you even more—and you'll get about four times the throughput in the bargain.

WHEN IS THE BEST TIME TO TALK TO RANDOLPH ABOUT LEASING A 3083?

Now—because Randolph has 3083's available for 4th quarter delivery. But it's never too late, even if you already have a machine installed. Whatever your situation, we can tailor a lease that will fit your exact needs and let you start saving money right away.

TALK TO RANDOLPH NOW.

We can solve problems like these, and more . . .

Stuck with a lease on your old machine?

We'll sublease it, and provide a new lease on a 3083.

Own a 3083 but need cash?

Sell your machine to Randolph, and we'll lease it back to you.

Machine installed on a rental basis? We'll show you how to end the lease and install a new 3083. Any termination charges can be folded into your new Randolph 3083 lease.

LEASING COMPUTERS IS OUR ONLY BUSINESS.

At Randolph, our people have an average of 18 years in the DP industry . . . from 360's to 3081's. They know all about alternative financing to be sure, but they also know their way around a DP department and the hardware in it.

WE LEASE MORE THAN 3083's.

Whatever your needs, now is the time to talk to Randolph. We provide leases for IBM 303X, 4300 and 3081 systems and peripherals—disks, tapes—as well as 3083's.

UNIQUE FINANCIAL STABILITY.

We're an important part of one of the nation's oldest and leading financial institutions . . . The First National Bank of Boston. 18 years in computer leasing gives added assurance that Randolph will continue as the leader in the computer leasing industry . . . continue to live up to the terms and conditions of our agreements . . . provide upgrades . . . fulfill all of our commitments.

LET RANDOLPH HELP YOU SAVE \$30,000 PER MONTH.

We can solve a lot of problems for you, and save you money, too. Talk to Randolph now . . . call Joseph B. Kelly, Jr., Senior Vice President, 800-243-5307.

537 Steamboat Road
Greenwich, Connecticut 06830
203 661-4200 • 800 243-5307

Randolph



THE FIRST NATIONAL BANK OF BOSTON
BANK OF BOSTON

A MEMBER OF COMPUTER DEALERS & LESSORS ASSOCIATION RANDOLPH COMPUTER CORPORATION A subsidiary of

Buy • Sell • Lease

SYSTEMS

DEC

New & Used Equipment

PERIPHERALS

CPUs
11/34 11/44 11/70

DISCS
RP04 R06 RM02
RK06 RL01

TAPES
TE10 TL45

TERMINALS
LA36 LA120
LA80 VT100



Carl R. Boehme & Assoc., Inc.
SPECIALISTS IN DIGITAL ENGINEERING
Phone (408) 737-2666 Telex 1724347

DATA GENERAL

We Buy, Sell And Service

New And Surplus Systems and Peripherals

Call Or Write

Hanson Data Systems

(outside Mass. toll free)

1-800-225-9216

(within Mass.)

(617) 481-3901

P. O. Box 27, Southboro, MA 01772



EXPERTS IN

IBM

BUY • SELL • UPGRADE

S/34

S/38 • S/32 • S/23 • 5110 / 5120
SERIES 1 • ALL IBM EQUIPMENT

- Guaranteed IBM Maintenance
- 25 to 35% Off IBM List

WANTED

- All S/34 Configurations
- 5256 • 5251 • 5211 • 3262
- Any leased or rented 34's

- We deliver and install all systems.
- All Peripherals and Upgrades Available

CALL COLLECT: PAUL CAYTON
714-578-5410

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

SYSTEMS • PERIPHERALS • PARTS

DGPhil Thomas
305-392-2006**DEC**Bryan Eustace
305-392-2005

Jennifer Eustace

305-392-2007

TELEX 568-670

BUY - SELL - TRADE - LEASE

THOMAS BUSINESS SYSTEMS, INC.

**DEC
DISK
DRIVES**For
Immediate
Delivery**RP06-AA
RP06-BA**CERTIFIED
FOR DEC
FIELD
SERVICE**CALL TODAY:
(703) 841-5634**

Buy - Sell - Lease

**S/32
S/34
S/38****IBM****3741
3742**

CPU'S CRT'S PRINTERS

ALL MODELS

PURCHASE LEASEBACK

SHORT & LONG TERM LEASES

**Computer Marketing
of America, Inc.**P.O. Box 90907
422 Acklen Park Drive
Nashville, Tennessee 37209

Call: Dick Geyer

1-800-251-2670

In Tennessee: 615-297-7516

NEW USED

ADDS
DEC
DIABLO
HAZELTINE
NORTHSTAR
QUME
TEXAS INSTRUMENTS
TERMINALS
CRT'S PRINTERS
SYSTEMSTO 50% DISCOUNT
• IMMEDIATE DELIVERY
• LOWEST PRICES
• NATIONWIDE SERVICE
THE COMPUTER BANK
Huntington Station,
New York 11746
(516) 549-5500

BUY BROKER

3274-D31 Local Controller
3279-2A Color Displays
3278-2 Display
3287-C02 Color Printer
3277-2 Display
3276-2 & 3276-12
Control Units
Various KeyboardsAvailable
For Sale Or LeaseDelivery Now
Diane PrestigomoLeasing Dynamics,
Inc.1717 East Ninth Street
Cleveland, OH 44114
(216) 687-0100**CMA**

BUY SELL

IBM**SERIES/1
5110-5120
S/32
S/34
S/38
S/3****ALL MODELS**SYSTEMS AND PERIPHERALS
AVAILABLE NOW!

(408) 425-7333

**SOURCE
DATA PRODUCTS, INC.**

555 SOQUEL AVENUE, SANTA CRUZ, CA 95060

SERVICE ON SITE AND MAIL IN

**DEC COMPATIBLE
DISK SYSTEMS
62MB \$7,995**(includes LBI Controller)
The Control Data Disk Drives
and Emulex Controllers have
become the defacto industry
standard for DEC Emulation.
They are hardware and soft-
ware compatible with the LSI,
PDP, 11/70 and VAX Systems.
On-Site Maintenance is available
thru Control Data.**BUTLER ASSOC.**CALL 800-251-2670
(617) 964-5270**FOR SALE
IBM S/3 MODEL 6**5213 Printer
(2) 5444 Disk Drives
Currently On Maintenance
FRINGE BENEFIT SYSTEMS
Contact George Buhals
(313) 772-0960**COMPUTERWORLD
CLASSIFIEDS
WORK!**

- POSITION ANNOUNCEMENTS
- BUY SELL SWAP
- SOFTWARE
- SOFTWARE WANTED
- TIME & SERVICES
- REAL ESTATE
- BUSINESS OPPORTUNITIES
- SEMINARS/CONFERENCES
- BIDS AND PROPOSALS

It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or camera ready mechanical, stat or film negative of your ad, just call one of our ad-takers at 1-800-343-6474. They will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (teletypewriter service is available); note the ad size you want; and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with you insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

**Ad closing is every Friday,
6 working days prior to issue date.**

Rates: Open rate is \$112.70 per column inch. Columns are 2" wide. Minimum ad size is 2 column inches (1 column wide by 2 inches deep), and costs \$225.40 per insertion. Additional space is available in half inch increments. Some sample sizes and costs are shown.

1 col X 4" - \$450.80
2 cols X 4" - \$901.60
2 cols X 5" - \$1127.00
2 cols X 8" - \$1803.20

Discounts are available when you run more than 35 column inches of advertising in a year anywhere in Computerworld. Box Numbers are available, \$15 per insertion.

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

Boston - (617) 879-0700
New York - (201) 967-1350
Chicago - (312) 827-4433
San Francisco - (415) 421-7330
Los Angeles - (714) 556-6480

TELECOPIER SERVICE - (617) 879-0700

William J. Mills, Manager Classified Advertising

**COMPUTERWORLD**THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
375 Cochituate Road, Box 880, Framingham, MA 01701/(617) 879-0700

CMI

AMERICA'S LEADING SPECIALIST SERVING THE USED MARKET REGIONAL MARKETING OFFICES

California (408) 773-1614
(415) 956-3183 (714) 752-8443
Chicago (312) 693-2790
Dallas, TX (214) 385-0806
Houston, TX (713) 780-7459
New Jersey (609) 645-7282
New York City (212) 349-0718
Tennessee (615) 449-6633
Geneva, Switzerland Telex: 289950 WTCG
Montreal, Quebec (514) 871-1121
Paris, France Telex: 613910 CMI FR
Windsor, Ontario (519) 258-8910

CMI FINANCIAL SERVICES, INC.
755 W. Big Beaver, Troy, Mich. 48084
(313) 362-1000

CMI CORPORATION Since 1969
755 W. Big Beaver, 19th Floor, Troy, Michigan, 48084
TWX/TELEX: 810 232-1667 CMI CORP TRMI

(313) 362-1000

A Torchmark Company

Member CDLA

3033-U16

Fully Featured
Available Now
Lease or Sale

USED
**3081-D's
or K's**
For Sale or Lease

3270

3042-2

Attached Processor
Available Now
Short Term Lease

All 3033
Features
4850, 6850, 3868...etc.
Available Now

SYSTEM 34 SYSTEM 3

Dennis Pennington

3033

S to N N to U
Upgrades

Wanted
4341-M2
Call Now

3350 3880 3830
3340 3370 3330
3375 3380
Buy/Sell/Lease

Pat Callahan
Mary Drangin

3081/3083

Lease Financing
Available

For Your System or Ours
2, 3, 4 or 5 Year Terms

Wanted
4341-L01
Call Now

2914

3203 3505/3525
3800 3211/3811

Mary Drangin
3803/3420
Immediate Delivery
Tim Ryan

AMDAHL V8 and V611

Available for
Sale or Lease

SYSTEM 38

Convert your IBM
S/38 Lease to a
CMI Leaseback
12-36 Month Terms
New/Used CPU's Avail.
Kevin Schaefer

Communications

IBM 3705
IBM 3704

Bill Maullo

MUST SELL . . .

RECONDITIONED DISK EQUIPMENT RETURNED ON LEASE!

- **CDC 9766 DISK DRIVES**
300MB, SMD Interface, Dual Port feature. Only
22 Available. A steal for mini systems . . .
Asking \$7,000 ea.
- **UNIVAC-COMPATIBLE DISK SUBSYSTEMS**
5046/8434/8450-Compatible. Amperif's Model
ADB 5046-95 Controller. Only 4 Available . . .
Asking \$44,100 ea.
For disk drives see above, more available soon.
- **ALSO . . . TELEX TAPE EQUIPMENT**
Several models of drives, IBM and OEM formatters,
spare parts.
- Quantity discounts available
- 30-Day Warranty from Amperif
- Optional Amperif Maintenance Program
- Lease Terms Available
- Any Reasonable Offer Considered
- Buy Direct — No Broker Costs

Amperif
CORPORATION

21345 Lassen St.,
Chatsworth, CA 91311

Ask For John Kjos 213/998-7666

HP

1000
SERIES E, F, M
3000
SERIES II, III,
30, 33

7920
50 MB DISK DRIVE
7970E
1600 BPI TAPE DRIVE
2631B
180 CPS PRINTER
2622A
TERMINAL
& MUCH
MORE

encore
(213) 393-8268

BROOKVALE

RENT • SELL • UPGRADE • BUY

DEC

PDP 8, 11/03, 11/04, 11/23, 11/24, 11/34,
11/44, 11/45, 11/60, 11/70, VAX/750, VAX/780

SYSTEMS • OPTIONS • SUPPLIES

11/23	128Kb MOS, dual RL02, RT-11/RSX-11M	Call
11/34A	256Kb MOS, dual RK07, LA120, RSX11-M	Call
11/44	256Kb, dual RL02, LA120, RSX11-M	Call
11/70	512Kb, dual RPO6, TWE16, LA120	Call
11/80	CPU only	Call

SPECIALS

DD11-DK	LP11-VA	RK07-EA	RPO6-AA
DH11-AD	MS11-LB	RK711-EA	RKV31-SA
DL11-W	MS11-LD	RK05F-FA	TWE16-EA
DZ11-E	MS11-PB	RL02-AK	TWU16-EA
FP11-A	MSV11-DD	RM02-AA	VT55-FA
HERD-CA	RK06-EA	RM03-AA	1134A-YE

BROOKVALE ASSOCIATES

40 ORVILLE DRIVE • BOHEMIA, NEW YORK 11716

(800) 645-1167 • NEW YORK (516) 567-7777

WANTED! SYSTEM/32 SYSTEM/34

If you have a System/32 or System/34 to sell, we would like to buy it. Since we are dealing on behalf of already committed buyers, we can afford to pay top dollar for your computer.

CONTACT

Mr. William Bell
National Medical Computer
Services, Inc.
7578 Trade Street
San Diego Ca. 92121

Call Toll-Free
800-582-6474

3705

Buy, Sell, Lease

Call Bob Irish

(612) 884-3366

Centron-DPL Company

CDLA

**FORSYTHE
McARTHUR ASSOCIATES, INC.**

DEALER / LESSOR OF IBM
Computers and Peripherals

Home Office
Chicago
919 North Michigan Avenue
Chicago, Illinois 60611
312 943-3770

FOUNDED 1971

Branch Offices
Atlanta
404 953-9457
Dallas
214 934-9516

CDLA

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap



**Want to Buy,
Sell or Lease?**
Or just upgrade your present
equipment?

**JUDY, MARILYN AND DEBBIE
WILL SAVE YOU MONEY**

Call **214-258-0541** Today!

System/32s, 34s, 38s, 4300s,
3270s, 370s, all peripherals and I/O...much more!



METROPLEX COMPUTER COMPANY, INC.

320 Decker Drive • Suite 180 • Irving, TX 75062 TWX 910-860-9285

WANG

**DPU w/PHOENIX DISC
DRIVE PACKAGE - \$13,500**

- CDC MODEL 9448, 96 MB DISK DRIVE
EQUIVALENT TO WANG 2280-3
- WANG MODEL 2280 M DISK PROCESSING UNIT
- WANG MODEL 22C03 DISK CONTROLLER
- CDC UNIVERSAL DISK CABINET
- A & B CABLES, TERMINATOR AND LAP PLUGS
- NEW, IN STOCK, LIMITED QUANTITY

XETA, INCORPORATED

51 LAKE STREET NASHUA, NEW HAMPSHIRE

(603) 881-8122

1-800-258-2003

Burroughs B1900 System

All Or Part

- B9484-5 130 Mb Disk
- B1059 Expansion Cab.
- B9499 Tape MEC
- B1051 6 MHZ Clock
- B9249-4 350 LPM Prtr

Memory, Single and Multi Line
Controls Available

Boynton Business Systems Inc.

145 Route 208

Montgomery, New York 12549
(914) 457-9221

→ NCR USERS
**Are You Thinking
of Trading Up ↑ ?
or Down ↓ ?**

Call Us for a Quote



SMITH ANDERSON CORP.
519-340-6688

Authorized **NCR** Systems
Distributor - Nationwide
(New or Used Systems)

71-856 Highway 111
Rancho Mirage, Calif. 92270

BURROUGHS SPECIALISTS
B1000 TO B7000 SYSTEMS
PERIPHERALS & TERMINALS

**CMC BUYS
CMC SELLS
CMC LEASES**

CALL JOE CORNER FOR PERSONAL ATTENTION
602-264-5151

COMPUTER MARKETING CORPORATION
5651 NORTH SEVENTH STREET
PHOENIX, ARIZONA 85014

MEMBER COMPUTER DEALERS & LEASERS ASSOCIATION

**New
11/34A
Systems
50% Off**
Tom Schreier
(203) 728-6777
Quodata

**FOR SALE
VAX 11/730**

SVCXWMACK

INCLUDES:
VAX VMS LICENSE
RA80
RL02
DZ11-A

714-632-6986

**FOR SALE
VAX 11/730**

20% OFF

Contact Ray Gillespie
(800)354-9206
(In KY) (606)278-0411

Coastal Computer Marketing
**IBM
Equipment**
BUY SELL LEASE

Herb Levy
Al Sheldon
(213) 986-4830

**BUY * SELL * LEASE
IBM SYSTEMS**

Wanted: All System 34's
Available Immediately
**NEW NEC 55CPS
Letter Quality Printers**

- 5251-12 Dual
 - System 32-B33
 - DDCC 6541-07, 150CPS
 - 34/38 Compatible
- DECISION DATA PRINTERS**
600LPM to 1500LPM
Call Command Computer Marketing Inc.
(214) 495-0446

**FOR SALE
DATAPoint
6600 Processor**

With 256K of Memory, 9390 Disk
Drive (2X67MB), \$39,950.
Also Datapoint 9404 Multi-Function
Communications Adaptor,
\$250, 1 year old. Has had continuous
preventive maintenance.

Contact Don Ball
P.O. Box 3052
Irving, TX 75061
(214) 254-0151

**FOR SALE
Used INTERGRAPH
Turnkey Computer
Graphics System**

- Partial Listing of Hardware
- 2MB DEC VAX 11/750
 - 160MB Disk Drives (2)
 - Tape Drive
 - 600LPM Printronix Printer
 - 19/19 Monochromatic Dual Display
 - Graphic Workstations (2)
 - Electrostatic Plotter

- Partial Listing of Software
- Intergraph IGDS 8.5 Graphics
 - DMRS Database
 - Engineering Nucleus/Piping
 - Set of Architectural User Commands
- Please call Mr. Raul Pupo
(215) 443-8808

**FOR SALE
MICRO EQUIPMENT**

- (2) Radio Shack Model 2 CRT's
\$2600 Each
- (1) 20 Meg Corvus Disk Drive
\$5660
- (1) 20 Meg Corvus Disk Drive
w/Mirror \$6400
- (1) Corvus Multiplexor \$500
- (1) 6081 Centronics Printer
600LPM, \$5000

All Equipment Less Than 1 Year Old
Call (201) 753-6662
Ask for Charles Hehn

**87% Repeat
Customers**

The first reason for doing business with First
Computer Corporation is our commitment to
service. 87% of our customers do business
with us repeatedly! The second reason is
price. Being in the computer business since
1963 provides us the knowledge and insight
to provide the best prices available. The third
reason is timeliness. Frequently we will be able
to fulfill your timing requirements.

Buy - Sell Computer Equipment
First Computer Corporation
4890 Reschke Street
Houston, TX 77096
713-666-3033

BUYING?

**Whether you're
looking for
big computers
little computers,
terminals,
printers,
software,
time sharing
or services,
you'll find it in
Computerworld
classifieds.**

**Pages of ads every week,
with everything
from Discs to DEC's
from time sharing to
terminals, and
software for every
size computer system.**

**You'll find
what you need in
Computerworld
classifieds.**

**Call 800-343-6474
(or 617-879-0700)
for more information**



COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

375 Cochituate Road, Box 880, Framingham, MA 01701/(617) 879-0700

buy sell swap

buy sell swap

buy sell swap

buy sell swap

buy sell swap

***** DEC *****

BUY—SELL—LEASE—TRADE—CONSIGN

— CPU'S —

11/23 11/34A 11/44 11/45 11/70 11/750

— DISCS —

RK05 RL01 RL02 RM02 RM03
RP04 RP05 RP06 RK06 RK07

— TAPES —

TM11EA TE16 TWE16 TJU45 TU45

— MEMORY —

11/34 11/44 11/45 11/70 VAX
MS11JP MS11MB MM11UP MJ11BE MS750
MS11LB MF11UP MK11BE MS780
MS11LD MK11CE

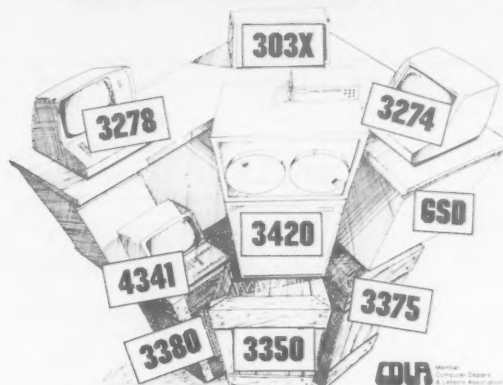
— MISC. —

FP11A FP11B FP11C FP11E FP780
DMC11AL DMC11AR DMC11MD DMC11DA DMR11
DJ11AA DJ11AC DH11AA DH11AD DQ11
DV11 DZ11 DU11 DL11 DR11
RH780 RH70 RH11 KK11 RK611THOUSANDS OF MODULES IN STOCK
SPARE FOR ANY DEC UNIT.
CALL FOR QUOTENATIONAL COMPUTER
EXCHANGE

800-854-7224

6980 Aragon Circle Suite 5 • Buena Park CA 90620

(In Calif.) 714-522-1870 TWX: 910-596-1499

THE HARDWAREHOUSE IS
HARD TO BEAT FOR PRICE
AND AVAILABILITY.

Call Us Collect

UNITED STATES

Boston: Eastern Regional Headquarters

Washington, D.C. (617) 272-8110
New York (703) 525-5233
Philadelphia (212) 832-2622
Syracuse (215) 293-0546
(315) 682-6120

Austin: Southern Regional Headquarters

Atlanta (512) 451-0121
Dallas (404) 768-6535
Houston (214) 233-1818
(713) 629-4440

Chicago: Central Regional Headquarters

Pittsburgh (312) 789-9100
Detroit (412) 922-8920
(313) 995-8717

San Francisco:

Western Regional Headquarters

Los Angeles (415) 283-8980
Denver (213) 670-7991
San Diego (303) 534-7436
Seattle (714) 231-2361
Phoenix (206) 447-1682
Portland (602) 248-5978
Salt Lake City (503) 228-7033
(801) 298-4281

CANADA: Toronto

Montreal (416) 366-1513
(514) 281-1925

BROKER/DEALER SALES AND LEASING

Phoenix: (602) 248-6848

CPU's, Memory Dave Keane
Peripherals Sandy Mitchell
Communications & Terminals Tim Stone
GSD George Beck
Leverage Leasing Phil Iversen or Wayne U. Smith
Broker/Dealer Dave Revere

GREYHOUND COMPUTER CORPORATION

Greyhound Tower Phoenix, Arizona 85077, 800-528-6113

ATTENTION
DEC USERS

CASH

For Your
Surplus

DEC

Equipment

1-214-680-3848

MIDWEST SYSTEMS, INC.

777 So. Central Expressway, Suite 7-P
Richardson, TX 75081

Inflation Fighters

Quality & Savings

Slightly used, Money Back Guarantee,
Full Reels. All External Labels Removed
Guaranteed for use at 600 BPI through
6250 BPI.2400' Reel \$4.95 ea.
1200' Reel \$4.25 ea.
600' Reel \$3.50 ea.

All Tapes with Hanging Seals

We pay freight on orders over 200 tapes.
All orders shipped within 48 hours.
Call or WriteComputer Tape Mart
44A Seabro Avenue
N. Amityville, New York 11701
[516] 842-8512


BURROUGHS 6810
Available 9/15
BURROUGHS 2930
Available 9/1
BURROUGHS 5930
Available Immediately
BURROUGHS 4800
Available Immediately

2480 W. Alameda Ave.
Denver, Colorado 80223
(303) 922-8331
Telex 910-931-0483

Member
Computer Dealers
& Leasing Association

ALL 370 & 43XX SYSTEMS

CPU's & Peripherals
Purchased, Sold & LeasedCORPORATE
COMPUTERS, INC.Contact:
Norm Burger

(203) 661-1500

115 Mason St., Greenwich, Conn. 06830

Member Computer Dealers & Leasing Association

DATA GENERAL
New & Used EquipmentBUY. SELL.
TRADE.

mcintyre's

Mini-Computer
Sales Group Inc.

(313) 583-4100

TLX: 810-232-4866

Answer Back: MCDATAGEN MAHS

32050 Edward Ave.
Madison Heights, MI
48071

BUSINESS

OPPORTUNITIES

INVESTORS SOUGHT BY
COMPUTER EDUCATION SERVICES
OF BOSTON, INC.We Want to Grow. Small Boston-based
Computer Programming School, also
offering Advanced Data Processing
Seminars in CICS, JCL, VSAM and oth-
er specialties is looking for a few in-
vestors, large or small. If interested, call
Jeannette McInnes at 617-536-6677 or
send a letter of inquiry to:COMPUTER EDUCATION SERVICES
OF BOSTON, INC.
739 Boylston St.
Boston, MA 02116

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

DEC

FOR SALE
DEC 11/34 256KB
(2) RK07 w/Controller
(1) LA-36
(1) LA-180
(1) DUP11
RSX-11-M Operating System
ALSO 2200/P SYSTEM
Contact Mr. Opalek
(216) 292-3774

DEC SALES
SURPLUS INVENTORY
11/03 systems w/RL01 disk,
LA180 printer, 64 KB memo-
ry, RT-11 license \$4,500
RL01 disk packs \$100
Complete packaged 11/23
systems with dual RL02, 256
KB, LA180 printer \$12,500
LA180 printers with interface
& controller \$600
DUV-11's \$400
11/03 CPU's w/FI. Pt. \$250
Other Configurations CALL
E.E.C. Systems Inc.
(617)443-5106

For Sale
11/34A **DEK11**
(2) RL02 in H9642
VT100 **RSX11M** \$16,300
Also Available
DZ11A or C **FP11A**
DUP11 **KK11A**
TJE16 **H775CA**
Call (713)445-0082
Digital Computer Resale

VAX 11/750 Includes:
- VMS ver. 3.0
- 1 MB memory
- RM03
- TS11-CA
- LA34
- Control/Data Program Generator
- DZ11-A 8-line MUX
- 14 months old
Call: INTERFACES LIMITED
(412) 941-1800

For Sale
11/44 System
D548E-AY
Want to Buy
Used Disk Packs
RK06 & RK07
ESS (701) 237-0689

DEC

DEC SPECIALS
(2) 11/70 w/1/2MB MOS,
Dual H960 Cab
(1) RM02 Used
Call for Quotes
SEVCO INC.
(617) 435-6938

BUY • SELL • TRADE
DH11-AD \$3750 RH11-AB \$3750
DL11-E... \$ 395 RK05J/F... \$ 795
DZ11-B... \$1500 RK07-EA... \$4995
LP11-AA \$6950 RM03-C... \$1550
MS11-MB \$1375 RM80-C... \$1550
NEW YORK COMPUTER EXCHANGE
(516)52-8666 (800)645-9109
Ask for BOB or HEBA GRANT

DEC BARGAINS
FPF11 MB186 \$1400
11/34A CPU Set \$1865
11/44 KE44-A 'CIS' \$2975
11/70 1/2MB, MK11-CE \$2950
11/44 256KB, MS11MB \$1475
11/34 256KB, MS11LD \$1375
11/34 128KB, MS11LB \$965
DZ11 MUX Bnd \$1275
FP11A Flng Pt. \$1875
CALL RAY (617)275-8800

DEC NEW & USED
PDP 11/70 \$35,000
CDC 9766 Disk Drive \$8,500
CDC Disk Packs \$600
Kennedy 45 cps tape drive/ctrlr \$4500
Used VT100s \$995
New VT102s - VERY LOW PRICES!
QUICK DELIVERY - CASH PRICES
SPARTIN SYSTEMS (713)486-0771

DEC NEW & USED
BUY • SELL • EXCHANGE
Systems • Processors • Memory
Options • Peripherals • Modules
LAKEWOOD COMPUTER CORP.
3105-9 Keller St., Santa Clara, CA 95050
(408)266-2545

NEED TAX WRITE OFF?
Small New York college seeks dona-
tion of following DEC equipment - new
or used:
PDP 11/70-1MB MOS with
RM03 type drive ideal.
RSTC/E operating system preferred.
Reply to CW-84080
Computerworld
Box 980
Framingham, MA 01701

DEC

WANTED TO BUY
• VAX 11/780
2 meg, (2) RM03, TE16,
LA120, DZ11A
• DEC 50HZ EQUIP.
• VELOX INT'L
(313)761-4848

HEWLETT PACKARD

BUY & SELL
1000 & 3000
Systems • Components
WESTERN DATA
SALES, INC.
(213)539-8917

AIRBORNE
DATA SYSTEMS
is expanding to better serve your
HEWLETT PACKARD
computer product needs!
NEW Accounting Facility:
2660-4 John Montgomery Drive
San Jose, CA 95148
Sales Office:
PO Box 3784
Sonoma, CA 95370
(209) 533-2400
TELEX 176256 FAX Available

HEWLETT PACKARD
• SERVICE •
Specialists In Both
HARDWARE & SOFTWARE
AMITEK COMPUTER SERVICES
1440 S. State College Blvd. 3J
Anaheim, CA 92806
(714) 956-4091

HEWLETT PACKARD

Buy-Sell-Lease
HP3000 3X, III, 4X
and related peripherals
Call Carol
CSU INDUSTRIES, Inc.
516-239-4310

HEWLETT PACKARD

HP 2000 Access System
HP 1000 XL Mod. 10
HP 7970E Tape Drive
HP 7905 Disk Drive
HP 2624A CRT's
COMPUTER MEDIA, INC.
(312)354-7878

WE BUY AND SELL
HP 3000 COMPUTERS
SERIES 11, 30 & 33
Complete Systems, Memory,
Terminals, Disk Drives, Tape Drives,
Miscellaneous Parts.
AVAILABLE IMMEDIATELY
FINLEY & ASSOCIATES
(213) 628-8846

PRINTERS

For Sale
PRINT TRAIN
1416/HN2
(2) 3742/01 & (1) 3411/01
w/7003, 3211
Call Glenn Clark
(313) 553-4140

Teletype Model 40
300 LPM full char. ptr.
BUY • SELL
REPAIR & REFURBISH
LOCAL DATA
2701 Toledo St., Torrance, CA 90503
(213)320-7126

WANG

FOR SALE
600 LPM PRINTER for MVP or VS
(2) PCS-II w/16K
22276 Async. Comm. Contrlr.
10 MB Disk Packs
Floppy Disks
(717)232-0583
SKELLY & LOY

ATTN WANG USERS!!
WANG EQUIVALENTS
Pre-Owned, Reconditioned & G'ed
2280N-1 V-1 Eq: 26-30 Mb.....6.9K
2280-3 Eq: (w/dup) Unused.....13.9K
2265V-1 Eq: 75Mb Disk.....5.8K
2265V-2 Eq: 288Mb Disk.....11.4K
2260-C Wang 10Mb.....4.8K
2281-P Wang Daisy.....2.7K
2273-1 Eq: 300 LPM Band.....3.9K
2208-2 Eq: D.D. Tape, New.....7.9K
2236DE Eq: New.....\$1,750
Call Now!
617-372-6536
CFR Associates, Inc.

SYSTEMS BUY/SELL PERIPHERALS
DATA & WORD PROCESSING
CPU's, CRT's, Disk & Tape
Drives, Printers, Memory Up-
grades, Disk packs
(212)431-1100
ERST INTERNATIONAL

BUY-SELL
2200 OIS VS
Systems in Inventory
VS/80
LVP
And Peripherals
OEM
(602) 277-8230

VS SOFTWARE
M.I.S. product brochure available:
THE EXECUTIVE SECRETARY, Mes-
saging/Calendar/Scheduling, Account-
ing, WIP/DP, Programming and Docu-
mentation Aids, Custom and packaged
software.
Microcomputer Interactive Systems, Inc.
9550 Firatone Blvd., Downey, CA 90241
24-hour number: (213) 882-1605

WANG

VS CONVERSION
FAST, INEXPENSIVE
Reliable Software Conversion
To the WANG VS
NETROM, INC.
99 St. Regis Crescent North
Downsview, Ontario, Canada M3J1Y9
(416)636-8333

VS UTILITIES
EZSCREEN - New faster meth-
od for screen creation
BACKLUB/BACKFILE - Faster
way to selectively backup files
and libraries
Southern Data Systems, Inc.
5109 Hilly Ridge Dr., Raleigh, NC 27612
919-781-7603

WANG VS SECURITY
ENHANCEMENT PACKAGE
NOW AVAILABLE
• Program Logging
• Retention
• Complete Reporting
NETROM, INC.
99 St. Regis Crescent North
Downsview, Ontario, Canada M3J1Y9
(416)636-8333

BASIC FOUR

FOR SALE BY OWNER
BASIC 4 730
160 Kbytes Memory
(3) 2580 75MB Disk System
(7) 7230 Display Terminals
(2) 300 LPM Printers
Sorbus Service Since New
Available May, 1983 \$80,000
Call Joel Hamoff
(516)794-9700 x211

BUY SELL TRADE
BASIC 4
Systems, Peripherals,
or Components
Sorbus Guaranteed
ALETA ENTERPRISES INC.
28 Esplanade, Irvine, CA 92715
(714)552-3559

THE BULLETIN BOARD

A Low-Cost Way to Sell Hardware and Software
in Computerworld.

What is The Bulletin Board?

It's a classified section in Computerworld designed especially for the selling and buying of individual pieces of hardware in a convenient, low-cost format. It is especially suited to companies that have a piece of used equipment they want to sell. For one low price, you can inform more than half a million Computerworld readers around the country of your equipment's availability.

How Does The Bulletin Board Work?

Bulletin Board ads come in standard units (one column wide by one inch deep) and standard typefaces. (Units may be combined to produce deeper ads, but one column is the maximum width and no units of less than one inch are available.) Ads are arranged under headings (such as "IBM", "DEC" or "Printers"). The headline of the ad is set in larger, bold type, and should contain the standard equipment identification. The body copy should describe the equipment very briefly and give the person to contact. This is all the information an interested buyer needs to follow up. No ad should have more than one piece of equipment or software.

Price for each standard unit is only \$115.00 (One unit minimum and no fractional units available.) Anyone can place an ad, but no agency commissions are paid, no quantity discounts allowed, and no credit toward rate is given for contract advertisers who advertise in other sections of Computerworld. It's a simple and effective system for buying and selling hardware and software.

How to Place an Ad in the Bulletin Board.

Ads are accepted in the mail, by phone or by telecopier. Ads can be accepted up until the Monday before issue (7 days in advance of issue date). You should write out your ad before submitting it. (The standard size will hold approximately 25 words of copy.)

Once you've written your ad, send it in with the coupon below or call one of our ad-takers. (If your company has never advertised with us before we request a check with your order.)

Remember that all ads are standard. No special typefaces, no borders and no logos are allowed. Ads are set on a six-column page in our classified section under the heading "The Bulletin Board.". We assume no liability for errors beyond the price of the ad in the case of material errors.

ORDER FORM

COMPUTERWORLD BULLETIN BOARD

Issue Date: Ads can be accepted up until the Monday preceding the issue desired. Computerworld comes out every Monday.

Classifications: Most ads will be classified according to the brand of equipment that is being bought or sold. These classifications are: Altos, Burroughs, Control Data, Data General, Digital/DEC, Hewlett Packard, Honeywell, IBM, NCR, Salvage, Sperry Univac, Teletype, Terminals, TI, WANG, Miscellaneous.

Copy: Copy for your ad must be cleanly typewritten and may be sent in via the mail or by telecopier (telecopier extensions are 410 and 451). Ads may be given over the phone to our team of ad takers. The standard size is 1 column by 1 inch deep. These units may be combined to form larger sized ads. Describe the equipment very briefly, give the price and the name of the person to contact. All ads will be set up using a standard format. No borders or logos are allowed.

Cost: The price for each standard unit is \$115.00 (One unit minimum and no fractional units allowed). There are no agency commissions and no quantity discounts.

Billing: Once you've written your ad, send (or call) it in with your name and address for billing purposes and we'll run it. (If your company has never advertised with us before, we request a check with your order.)

Issue Date(s): _____

Signature: _____

Name: _____

Company: _____

Title: _____

Address: _____

Telephone: _____

Send this form to:
COMPUTERWORLD BULLETIN BOARD
375 Cochituate Road, Box 880
Framingham, MA 01701

(800) 343-6474

(617) 879-0700

The Bulletin Board

Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease Buy • Sell • Lease

HONEYWELL

HONEYWELL 62 USERS
AVAILABLE NOW
MSU 330 Disk Drives
VIP 7700R terminals
All L62 Peripherals
RED FOX ENTERPRISES
Contact Mort Wolf
(312)295-3946

LEVEL 6 & DPS 6 EQUIPMENT
NEW & REFURBISHED
Systems • Peripherals • Memory
CRT's • Applications Software
SUBSTANTIAL DISCOUNTS!
Address Computer Service Ltd.
100 Bearfoot Rd., Northboro, MA 01532
(617)393-6839
TWX 710-347-7574

LEVEL 6 & DPS 6
Parts or Complete Systems
BEST PRICES - BUY/SELL
HIS Maintainable
Also Applications Software
CD SYSTEMS INC.
(402)330-2310

LEVEL - 64
FOR SALE
SYSTEM OR PERIPHERALS
(3) MSU402
(3) MTU0410
(1) PRU0800
Call Ralph Applebee
(208)459-5011

DISK DRIVES AND PACKS

CDC DISK

ALL MODELS
IN
STOCK SALE

Nationwide Installation
Maintenance/Full Warranty
Choice of 50 or 60 Hertz
SAVE • SAVE • SAVE
Call 214-262-8201
DIMENSION SYSTEMS

CDC DISK DRIVES

9766 - 300MB
9762 - 80MB
9730 - 160MB
9715 - 160MB
9710 - 80MB
Special Pricing on all CDC Packs
Call for prices
Midwest Peripherals
(216) 543-7618

FOR SALE

CDC 9775
SMD Disk Drives
Dual port, cables
and terminators
price: \$17,500 each
Contact Don Hall
(303)430-0857

NCR

FOR SALE OR LEASE
BY OWNER
(1) 8575 CRITERION
With 4 Meg Main Memory
(10) 6580 Disk Drives w/Cntrlr
(1) 647 2000 LPM Line Printer
(1) 646 1200 LPM Line Printer
(1) 6420 600 LPM Line Printer
(2) 621 Communication Multiplexors
(2) 634 Magnetic Tape Units
(1) 6780 Check Sorter - 24 Pockets
(1) 721 Comm. Front End Processor
(38) 7900 CRT Terminals
(16) 2261 Financial Teller Terminals
(1) 7500 Key To Diskette Terminals
All Equip. is Under NCR Maintenance
For information Call:
Carl Stephenson or Bill Heidert
(915)873-4451

NCR

658 DISK UNITS
NCR Maint. Avail. Immed.
HARWOOD & ASSOC.
2 Northgate Park, Ste 304
Chattanooga, TN 37415
Tel. (615)870-5500
We supply more NCR Computer Equip.
To More NCR Users
Than Any Other Company.
Except NCR!!

SPREADSHEET
SOFTWARE
IDPS/IMOS \$395 IRX \$495
30 DAY TRIAL - \$50
SOFTWARE PRODUCTS CO.
P.O. Box 18814
Wichita, KS 67218
(316) 682-1762

TI

TI
700's, 800's, 990's, 660's, 300's
PRINTERS
TERMINALS SYSTEMS
LOWEST PRICES
IMMEDIATE DELIVERY
THE COMPUTER BANK
(516) 549-5500

CDC DISK DRIVES

ALL MODELS

AVAILABLE IMMEDIATELY
Nationwide Installation
Maintenance/Full Warranty
Choice of 50 or 60 Hertz
SAVE • SAVE • SAVE
Call 214-262-8201
DIMENSION SYSTEMS

CONTROL DATA

FOR SALE

C.D.C. Communications Equipment
(1) 2551-1 Network Processor; (1)
2554-32 Memory Expansion; (1) 2556-
3 Channel Adaptor; (1) 752-10 Con-
sole; (1) 2560-1 CLA Synchronizer;
(10) 2561-1 CLA Asynchronous.
Price \$34 800S US or 42 500S CAN
Contact: Jean Lapointe
1-819-376-5251

MISC. SYSTEMS

DAT/ OINT
8630
w/full memory, RIM & MPICA
9601
w/cut sheet feeder
Call Greg
(915) 332-1301

FOR SALE
MICRODATA
SERIES 8000
256K Mos Memory
128MB Disc
P300 Line Printer
45IPS/1600BPI Tape
8 Open Ports
Contact Leo Fohl
(216) 481-5500

WANTED OBSOLETE COMPUTERS!
IBM - BURROUGHS - HONEYWELL
And All Other Pre-1970. No Mini's. Also
buying circuit boards, connectors, etc.
EXCO METALS
P. B. Box 21188, Los Angeles, CA 90022
In California (213)294-1615
(800)321-6739

BURROUGHS

BUY SELL LEASE
AVAILABLE
• 1855 SYSTEM
• 1955 SYSTEM
(Confs. To Your Specification)
ALL SYSTEMS & PERIPHERALS
• SRI CENTURY 100 TERMINALS
• TMSO CRT's, MT993 CRT's
Depot Maintenance Available
Mr. Ross (216) 292-3774

BURROUGHS FROM OWNER
New - B1955, 524KB, (2) 650 LPM
prt, 206 drive, 80KB tape multi-line
6 adapters 30KVA power center.
also
(2) 206 drives, 650 lpm printer, new
Disk controller 205/07, MT 983's,
TD 832 & 33's
E. W. Reed (516) 588-0827

FOR SALE - B90-92
18.1 MB Disk, 384K CPU
w/Display & 120 cps printer.
2 TD831 CRT's, 1 TD832
CRT, Keyboards w/key lock-
ing. Super mini diskette.
Call CompuFlex, Inc.
(313) 537-1226

TERMINALS

MCO TERMINAL WAREHOUSE
BEST LITTLE WAREHOUSE
IN MICHIGAN!
DATASOUTH - TELEVIDEO
MICRO-TERM - NEC - DEC
OEM PRICING AVAILABLE
For Further Information
(313)924-1020

MISC.

DATAPoint

Buy* Sell* Trade
American Computer Exchange
(216)247-2100

FOR SALE

FOR SALE
INFOREX
2901
KEYSTATION
Call Will Lopez
(305)873-7167
Eastern Airlines
Miami, FL

TAPES TAPES TAPES
2400 ft. 6250 bpi Certified
Premium Quality Guaranteed
DEC, BASF, Memorex
Almost Virginal. Mounted/written once.
\$7.50 ea./10 \$6 ea./25 \$5 ea./50
Call For Larger Quantity Quote
Thomas Business Systems, Inc.
305-392-2005 ttx 568 670

MODEMS

YEAR END CLEARANCE SALE
DEC/BASF NEW MODEMS LOT SALE
US\$ 212M (200/1200) \$900 \$550
US\$ 212LP (1200 bpi) \$490 \$385
Current Astroland 200/1200 \$595 \$525
IBM/IBM Astroland 200/1200 \$595 \$485
U.S. Robotics 200/1200 \$540 \$490
NEC 200/1200 \$595 \$550
Iwatsu 200/1200 (w/E. In) \$495 \$550
Innovative Communications
(312)458-4874

Call
1-800-343-6474
to place your ad

IBM

158-U36
ISC, Madrids
Avail. Immediately
(214) 783-1212

Available Feb. 1, 1983
(1) 2501-B02
(2) 3330-011's
Call Williams Equity Group Inc.
(914) 238-5141

SYSTEMS 34/38
Lease or Sale
WANT TO BUY S/34's
(FOR INVENTORY)
Models & Peripherals
WE PAY CASH
LEAS PAK INTERNATIONAL
Tel. (817)268-0023

For Sale
(2) System 34's
By Owner
(1) E35, 128K, 128 Meg
Available 5/1/83
(1) F37, 256K, 257 Meg
1 Comm. Line, Console,
W/S Expansion
Available 7/1/83
Call Don Hemstreet (503) 472-4181

12 to 36 Month Lease
IBM 370
(135 - 138 - 145 - 148 - 158)
\$1 per month plus
IBM Maintenance
Limited Supply
1-800-554-9869
(404) 955-5851

4331-L2
Available 2/7/83
914-238-9631
Computer Merchants, Inc.

FOR SALE
IBM 4341 K01
Available now
Call K. Wayne Hilton
(305)873-7167
Eastern Airlines
Miami, FL

IBM 5120/5110
SYS 32 SYS 34
Tubes & Printers
Available Immediately
We Also Buy IBM Equipment
National Data Systems, Inc.
50 Congress St., Boston, MA 02109
(617)726-1213

IBM 5120
w/5103 Printer
Call GTEX
(214) 783-1212

FOR SALE
5251-11's
3277's (Any Keyboard)
IMMEDIATE DELIVERY
DATA EXCHANGE
(312)963-4424

For Sale/Lease
(2) 3370 A1, B1, S/38, S/34
2501 B1, 3340 A2, S/3 D26
3145, 3138 Systems
Vargo Companies
313-254-2850

For Lease or Sale
3880-1
(Qty) w/wo/8170
2 Yr-\$2150 3 Yr-\$1600
SYS COMP
(813) 799-4310 Collect

IBM

COAX CABLE
for IBM 3270
Beldon 9269
in stock - low price
CABLExpress
315-476-3000
Call for any type IBM cable

For Sale
1419 MICR
Call Dick Boyce
(813) 722-4534

FOR SALE
3747-1
Diskette to Tape Converters
1600 BPI
W/W/O Comm. Feature
914-238-9631
Computer Merchants, Inc.

FOR SALE
3420-5
(1x5)
1/Dual Density
4/Single Density
Available Now NYC
Call Howard King
914-238-9631

SALE/LEASE
5291-1
Immediate Delivery
Computer Merchants, Inc.
914-238-9631

BUY, SELL, LEASE
CRT's & Printers
5291-1, 5292-1, 5224-1 & 2
Available immediately with complete
IBM systems. Call regarding our flexi-
ble lease plans.
CERES CAPITAL CORP.
(212)279-4467
(713)827-7724

DISPLAYWRITERS
3 - 19K Workstations w/dual dis-
kette drives
1 - 40cps Printer w/sheet feed
Under IBM Maintenance
Available Immediately
Contact Dave or Robert
(209) 957-0800

SYSTEM 34
FOR SUBLEASE
64K Memory, 27MB Disk, 300
LPM Printer, (2) Displays
Minimum Term - 12 Months
MONTHLY RATE - \$1250
Call Howard Kozinn
DATLEASE CORP.
(203)222-0170

FOR SALE OR LEASE
S/38-581, 3370, 3262
S/34-E35, 5211, 5251-11
5225-1, 3271-2, 6666-34
5415-D24 System:
3340-A2, 1403-2
3741-2, 3340-52
Available Now At A Great Price!
DATAMARC (404)252-7480
6065 Roswell Rd., Atlanta, GA 30328

SLASH 3276 COSTS
W/A DATALYNX/3270 (\$1450) And 1-
or 2 Low Cost ASCII CRT, Printer, or
personal computers. Duplex Capability.
LOCAL DATA
2701 Toledo St., Torrance, CA 90503
(213)320-7126

FOR SALE
SYS 3/15D
512K, 3340, 3344, 1403,
LDA, BSCA, 3741, 3742
MAKE OFFER!
Contact Keith Grantham
(517)771-4197
Saginaw General Hospital

SYSTEM 32/34/38
BUY SELL LEASE
Peripherals - Features
Disk & Memory Upgrades
MIDLAND FINANCIAL INC.
(612)559-7171

IBM

SYSTEM 34
BUY SELL LEASE
Peripherals - Features
Disk & Memory Upgrades
Call Carolyn Kocky
American Computer Exchange
(216)247-2100

FOR SALE OR LEASE
SYSTEM/34
E-35 & D-34
SIGNIFICANTLY REDUCED
(512) 828-1239

WANT TO BUY
SYSTEM 34's
ALL MODELS
Hans Bressler
DATA 3 COMPUTER CORP.
(612)941-9495
(800)328-7938

Want to Buy
IBM S/34
Call Bill
Data Comp Computer
Leasing Company
312-448-4300

NEED IMMEDIATELY
IBM SYSTEM 38 MODEL 581
WILL PAY TOP DOLLAR!
CALL COLLECT
(615)588-1863

WANTED TO BUY
4341M2
Contact Mike Kennedy
Leasing Dynamics
1717 E. Ninth St.
Cleveland, OH 44114
216-687-0100

SPERRY UNIVAC

UNIVAC
90/30 processor 96KB
0773-99 printer, 132 pos.
0605 integral card punch
0717 Integral card rdr
8418-34 Disk (2)
Direct from owner - make offer
E W Reed - 615-588-0827

FOR SALE
UNIVAC 90/30
512K MEMORY
4 - 8418 DISKS
1 - DUAL DISKETTE
1 - 0773 PRINTER
AVAILABLE FEBRUARY 1, 1983
Under maintenance contract
CONTACT - LANE PETERSON
(713) 492-0550

FOR LEASE
UNIVAC 90/30
Available May, 1983
393K, 1400 LPM Drum Printer, 500
LPM Band Printer, (6) 8416 Disk
Drives, (3) CRT's, Reader, Punch.
Call Jeff Hays
404-758-9241 x231

WE BUY AND SELL
UNIVAC COMPUTERS
90 SERIES
03 SERIES
BC 7 SYSTEMS
1900 CADE
1100 SERIES
ANRIK CORPORATION
(602)945-0105

V-77 800 SYSTEM
(2) 256K CPU w/2 Pages WCS
(2) 9432/20 200 MB Disk Drives
(4) 10 MB Disk Drives
(2) 800 bpi Tape Drives
(2) 500/1600 bpi Tape Drives
(1) 300 lpm printer
(1) 600 LPM Printer
THE EXCHANGE (208)455-1000
Ask for JACK or TOM

SOFTWARE FOR SALE

PDP-11 & VAX USERS TRANSACTION PROCESSING

Cytrol's CYX system is the best choice for your complete transaction processing needs. A proven performer, CYX simplifies on-line application development to save time and money. We've removed the obstacles that can trip up smooth transaction processing to guarantee efficient, reliable systems.

Basic CYX extends RSX-11M/VMS to provide:

- Communications Management for 3270 type terminals.
- Screen Management with input editing and data validation.
- A Data Base Management System that delivers improved on-line performance.
- An unrestricted RSX-11M/VMS environment.
- Transaction Roll-Back with full restart/recovery.
- Performance Reporting

And...CYX supports optional software products that expand CYX services to include:

- IBM Reach Through
- Security Control
- Centralized Program Error Reporting
- Data File Maintenance Functions that eliminate the need to write programs to add, delete or modify records.
- Report Writing
- Mailbox Functions
- Text Filing
- DECNET Reach Through

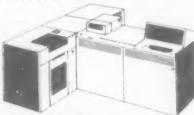
All additional applications can be written in any DEC supported language and have access to all RSX-11M/VMS services.

For more information about the CYX Transaction Processing System and how Cytrol can work for you, call or write:

cytrol

4570 WEST 77 ST, EDINA, MINNESOTA 55435 PHONE 612/835-4884
In the northeast contact: Russell Gloor 914/782-7822

Designed specifically for the
IBM System/38
and the Management Accountant



A comprehensive
**General Ledger,
Financial Reporting
and Budgeting System**

DHDial Company

Financial Accounting
and Reporting Systems

Murray Financial Center
5550 LBJ Freeway, LB-1
Dallas, Texas 75240
(214) 458-0987

SOFTWARE PRODUCTS FOR YOUR TANDEM COMPUTER

CONTROL™ Source Management
COMPARE™ File Utility
MTE™ Multi-Tasking Exec
STOCKAID™ Securities Database
CONTRACT AND CUSTOM SOFTWARE
ALSO AVAILABLE

NETWORK CONCEPTS, INC.
TWO RIDGEDALE AVE., CEDAR KNOLLS, NJ 07927
(201) 285-0202



THE TIME SAVERS

RPG to COBOL
or for those PL/1 Shops
RPG to PL/1

Two of the many successful translators offered by Dataware provide a smooth and effortless transition from RPG. The translators can handle most any level of RPG (SYS/3, Mod 20, etc.) and achieve an extremely high percentage of automatic conversion (approaching 100%) of the source code.

For more information please call or write today!

The Conversion Software People
Dataware, Inc.

2565 Elmwood Ave., Buffalo, NY 14217 (716) 876-8722

TELEX
91519



*Elegant
Software*

For IBM S/34 & S/38 Computers

General Accounting
Financial Reporting
Accounts Receivable
Accounts Payable
Order Processing
Inventory Management
Sales Analysis
Job Cost

Payroll/Personnel
Property & Equipment
Report Writer
Oil & Gas
All Systems are:
RPG II/RPG III
Data Base
Interactive

J. D. Edwards & Company

4949 S. Syracuse Parkway/Suite 5500
Denver, CO 80237
303/773-3732

Financial Planning, General Ledger Reporting System

for
IBM SYSTEM/38

call:

Interactive Program Products Inc.
800 Second Avenue
New York, NY 10017
(212) 752-5252
In Chicago (312) 693-6300
In Houston (713) 960-1315

Insight



IBM System 34
\$1750*
Will License
**P/R - G/L
A/P - A/R**

- Installation/Modifications Available
- Documentation Source Code Included
- References Available

**Call today for details
(802) 229-0160**

Systems Support Inc.

P.O. Box 205
Barre, VT 05641

* Special Group Pricing Expires Feb. 28, 1983

IBM Bisync for Apple II

Now your Apple II can operate as an IBM 2780/3780 terminal. Transfer files between Apple DOS disks and mainframe computer. Circuit board, programs and manual for \$850.

Ergonomic Software

P.O. Box K, New York, NY 10028
212 427-2373

PROVEN DEC SOFTWARE VAX and PDP11

- Accounts Receivable
- Accounts Payable
- General Ledger
- Property Management
- Asset Management

DIGITAL BUSINESS COMPUTERS

133 Manitou Dr.
Kitchener, Ontario
(519) 893-4200

JULIAN DATE

- ANS COBOL SUBROUTINE
- Convert a MM/DD/YY Date to Julian Format.
- Convert a Julian Date to MM/DD/YY Format.
- Given a date, compute the day of the week.
- Given two dates, compute the dates between.
- Given a date and a past or future day increment, compute a new date.

GCA

P.O. Box 862, Dubuque, IA 52001
(319) 556-5010

SELLING?

Sell your product or service in Computerworld classifieds.

Join the thousands of advertisers who use our classifieds because they get results.

You can find buyers for discs and DEC's, terminals and time-sharing, software and System 370's.

More than half a million active computer people read Computerworld each week, and you can reach them efficiently in Computerworld classifieds.

.....

To place your ad, or to get a rate card with complete details on Computerworld Classifieds, call or write:

Classified Advertising
COMPUTERWORLD
P.O. Box 880
Framingham, MA 01701

software for sale	software for sale	software for sale	software for sale	software for sale
-------------------	-------------------	-------------------	-------------------	-------------------

FRIEDMAN & ASSOCIATES, INC.

Specializing in IBM System/38


Worldwide Computer Sales & Service
Chicago, IL 60606
(312) 465-1100

Totally on-line code entry
complete manufacturing systems
MFG With on-line net change

- Fixed price software
- Including customizing
- Management consulting
- Ten years experience

We make it work!

SOFTWARE HONEYWELL LEVEL 6 & DPS 6



PROVEN reliable software from the COMPUTER PEOPLE.

CDsystems inc.
THE COMPUTER PEOPLE

14614 GORDON ST., SUITE 200
Omaha, Nebraska 68144 (402) 550-2310

PROVEN DATAPOINT SOFTWARE


- General Ledger
- Accounts Receivable
- Accounts Payable
- Computer Aided Programming
- Software Print Key
- RMS/DOS Consulting

THE INNOVATORS™
3407 West Wendover Avenue
Greensboro, NC 27407
(919) 854-2540
1-800-334-0547

HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS

HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS

HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS



HARRIS DATA SERVICE, INC.

Harris Data Service Software Product Distributors
% Computerworld Publications
Everywhere, USA and Canada

Dear HDS Distributors:

As the new year begins, we at HDS feel it is time to reflect on our past year of success and publicly thank the people that made it possible . . . you, our Software product distributors across the USA and Canada.

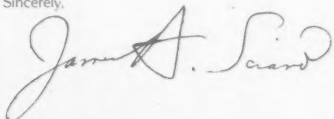
As the HDS Distributor Network completes its first full year, we are proud to say that its success has resulted in an international name recognition of Harris Data Service, Inc. and its fine financial software products for the IBM System/34 and 38. In addition, our network has proven to be a viable vehicle with which to meet the management information needs of the business sector. Those needs take the shape of software packages and their professional support! HDS fills those needs specifically with its professional line of financial software marketed and supported by The HDS Distributor Network! It has been a profitable venture for all . . . The End User . . . The HDS Distributor . . . Harris Data Service, Inc.

Let us continue to grow and improve on the HDS Distributor Program in 1983! Plans are now being made to expand our software product line and the hardware that HDS products process on! We thank you all and each one for your efforts and cooperation. We urge additional professional software firms who are serious about the software package concept to apply for a distributorship in 1983. "As we each grow we all grow!" From all of us at HDS . . . The best in '83!!

"We thank you all and each one . . ."

Advanced Computer Management Detroit, MI Chicago, IL Indianapolis, IN Los Angeles, CA System Design Associates Plaistow, NH Computer Associates Kent, WA Decision Strategies, Inc. Fort Lee, NJ General Software Systems St. Louis, MO Jeslyn Corp. Atlanta, GA Palarco, Inc. Wayne, PA Software Management Systems Sarasota, FL	Albany Data Systems Guilford, NY American Data Consultants Dallastown, PA CMC Software Carthage, MO Computer Solutions Marketing Group, LTD. Denver, CO Financial Data Corp. Shawnee Mission, KS Harris Data Service of Virginia Ashland, VA Metro Computing Corp. Troy, MI Professional Data Services Salinas, CA Straightline Data Consultants Portland, OR	Amberland Corp. Taunton, MA Automated Business Systems Green Bay, WI Communication Controls Inc. Houston, TX Cothern Computer Systems Jackson, MS Financial Mgmt. Associates Anchorage, AK Information System Services Vancouver, Canada Metro Information Services Virginia Beach, VA S & M Associates Garland, TX Total Resource Group San Mateo, CA
--	---	--

Sincerely,


 JAMES A. SCIANO
Executive Vice-President
HARRIS DATA SERVICE, INC.
Milwaukee, WI (414) 475-1760

11629 W. Dearborn Ave.
Milwaukee, WI 53226
(414) 475-1760

HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS • HDS

SOFTWARE WANTED

Computerworld CLASSIFIEDS:

Our business is to help you improve **yours**—via programmers, analysts, engineers, terminals, printers, software packages, computer time, computer services, office space, advertising for seminars & conferences, business opportunities, etc... **AND ...**

...exposure to an audience of over half a million readers nationwide...

...every week.

MARKETING SUPPORT WANTED

Marketing support needed for software product with sales potential in the \$100,000,000 range. This may turn out to be one of the best selling products ever produced by a software company, and concerns one of the hottest and most discussed subjects abroad in the data processing industry today. The product has a proven track record and runs on all IBM 380/370, 4300 or plus compatible machines.

Interested companies should respond with information concerning the history of their company, their current product line, and the size and strength of their marketing and sales organizations. They should also indicate what resources they would be able to devote to exploit this very exceptional software product. Experience in communications would be helpful.

Please respond to:
Reply to CW-B4069
Computerworld
Box 880
Framingham, MA 01701

TIME & SERVICES

LOOKING FOR DEVELOPMENT TIME?

\$7 PER HOUR
NO KILOCORE TICK CHARGES
NO CPU CHARGES
CONNECT TIME

RSTS E TIME

BUDGET BYTES™
212-944-9230

BASIC PLUS 2
COBOL
BASIC PLUS
PASCAL
C

WITH CROSS
COMPILE
SUPPLY

WORD-H WORD PROCESSING
WAFF
TECO
ED

PROGRAM
EDITING

by **Omni computer™**
1430 Broadway, New York, N.Y. 10018

COMPUTER TIME FOR SALE

I.B.M. 360-40
All Shifts, 128K, 4-2401
MOD-2, 9-2314, 1403-N1,
2540,

From \$35/Hour

Restaurant Associates, Inc.
 1540 Broadway
 New York, N.Y. 10036
 Contact
Al Palmo (212) 997-1411

CLARKE'S
WARRANT

**Computer
Services**

VS1-CICS-ROSCOE-DOS
REMOTE JOB ENTRY
CICS DEVELOPMENT
CICS PRODUCTION
CUSTOMIZED SOFTWARE
CONTACT JOE BARRETT
(201) 777-3454
15 MINUTES FROM LINCOLN TUNNEL
ONE PASSAIC STREET
MUDD RIDGE, NJ 07077

time & services

Computer & Memory Repairs

Any Manufacturer's Memories
CORE.....SEMI

DEC®—DATA GENERAL
Complete CPU's and Memories



THREE DELTA CORP.
1038 Kiel Court, Sunnyvale, CA 94086
(408) 734-2680 TWX 910-339-9511

TIMESHARING VAX 11/780-VMS

- FORTRAN Graphics
- BASIC Author Programs
- DATATRIEVE Custom Software
- Telenet Access Hydrology Application Software
- Floating Point Accelerator Low Rates (Interactive Batch)
- Direct Dial

Volume Discounts
7-Day, 24 Hour Service
Contact: Richard Santoro
In-Situ Inc.
209 Grand Ave.
Laramie, WY 82070
(307) 742-8213

DEPOT COMPUTER REPAIRS

DEC-DG
ALL BOARDS
1-2 WEEK TURNAROUND
MEMORIES
POWER SUPPLIES
DISKS PACKS AND TERMINALS
ANY MANUFACTURER

DIGITAL DATA SYSTEMS
1561 N.W. 85 Ave. Plantation, FL 33313
305-792-3290
1-800-327-8662
TELEX-232005 ATT DKS

NEED CABLING WORK DONE?

Specialist in Cabling of
Data Processing Equipment
Such As: WANG, DATAPOINT,
All other types
of Comm. Equipment
and also PBX Systems

Servicing New England, New York,
New Jersey & Phil.

Contact Joe Brodie
CABLE-MASTERS INC.
10 Kestney Rd.
Needham, MA 02194
(617) 449-6870

PROGRAMMERS

\$17/hr.
Business & Scientific
Contract Programmers to work in
your facility under your direction or
at our facility under our direction.
Option available to convert to per-
manent employees after six
months.

CONTACT JIM SHEPPARD
(714)898-8922
RAMSCO
5405 Garden Grove Blvd.
Westminster, CA 92683

time & services

time & services

FAST TURNAROUND ON REPAIR SERVICES

Computer Boards
Memories/Peripherals
Power Supplies

All Manufacturers

Real Cost Savings

Flat Rate Contracts Available

Emergency Repair
24 Hrs. 212/741-3800

NEW YORK
REPAIR DEPOT INC.
22 West 23d St., N.Y. 10010

CCD DEC AMPLEX XEROX
BURROUGHS HONEYWELL KENNEDY PERTEC

**Computers
Peripherals
Repairs
Refurbishment**
Quick Turn Around
Quality Service

COMPUTER SUPPORT SERVICES
3155 W. AGOURA RD., WESTLAKE VILLAGE, CA 91361

TYMSHARE®
(213)889-0031

* CDC is a registered trademark of Control Data Corporation
DEC is a registered trademark of Digital Equipment Corporation

LOW-COST VAX TIMESHARING

Reliable, Economical Timesharing on
VAX 750
As Low as \$12/Hour
24 Hour Service
In-House Development, Turnkey
Systems
and Support also Available

Immediate Delivery
CONTACT: Timesharing Dept.
INTEGRATED
SYSTEMS, INC.
PHONE: (201) 659-9182
WRITE: I.S.I.
93 Hudson Street
Hoboken, N.J. 07030

Tell Us About The

TIME & SERVICES

You Have To Offer
Here In...

COMPUTERWORLD's

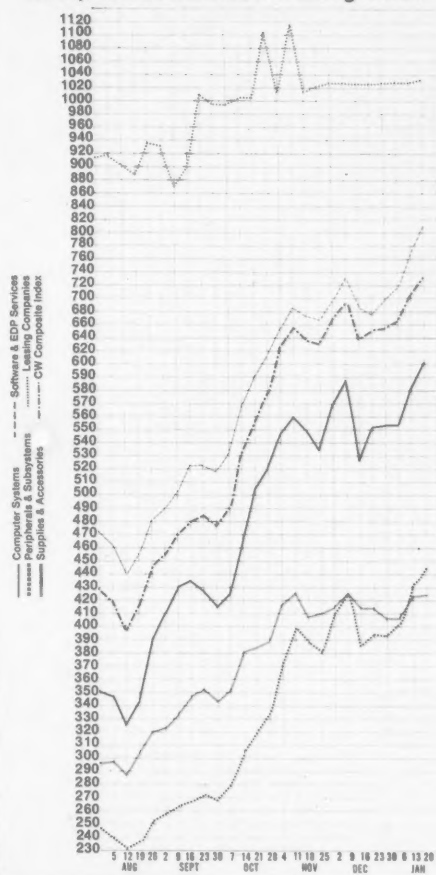
Classified Pages.

ADVERTISERS INDEX

Amer-Cal, Inc.	64
American Key Data	81
Anasazi	72
BDS Computer Corp.	9
John Beall Company	73
BMC Software	45
Budget Time-share	39
Bunker Ramo Corp.	30
Candle Corp.	6
Chubb Institute	52
Cincom Systems, Inc.	41,78
Circle Computer Services, Inc.	24
ComDesign	52
Compu-Share	36
Computer Associates	37
Computer Information Systems	53
Computer Management Research	70
Computerworld Office Automation	56
Computerworld Subscriptions	49
Computerworld Supplement	64
Computing Publications, Inc.	11
ComShare	76-77
CW Conference Management	70
Cord Cable Co.	48
Corodale	14
CRWTH	39
C-S Computer	24
Dallas Market Center	31
Data Base Management	44
Datapro Research Corp.	17
Datasphere	79
Datatrend	38
Dean Whittier Reynolds	26
Digital Controls Corp.	59
Digital Equipment Corp/ --NPM Peripherals	58
Digital Equipment Corp/ --Terminal Products Group	47
Digital Pathways	44
DuPont	50
Eastern Airlines	67
EEC Systems	38
EPS, Inc.	28
J.H. Ferguson & Associates	40
Fidelity	12
Fusion Products	36
Gejag, Inc.	79
General Research Corporation	50
General Systems	74
Graham Magnetics	61
G.R. Electronics	30
H & W Computer Systems	52
IBM	25,65
ICCP	46
Independent Computer Systems	32
Infodata Systems	5
Informatics, Inc.	80-81
Innovation Data Processing	7
ISSCO	33
KW Control Systems	48
J. W. Lampi, Inc.	22
Lee Data Corp.	42
Library Journal	10
Management Science of America	108
MCBA	13
McCormack & Dodge	68-69
MicroAge	42
Mini & Micro Educational	75
MTI Systems	60
Newcorp Products	46
Phoenix Systems	14
Popcom	21
Questionics	12
Qume	22
RAMTEK	18-19
L. F. Rothschild	24
SAS Institute	43,54-55
Science & Tech. Press	26
Signal Technology, Inc.	52
Software AG	53
Software Results	40
Software Technology	79
Solutions, Inc.	10
Southern Systems	21
Storage Technology	63
Stratus Computer	29
Synsori	3
Sysed	60
Technalysis	72
Technical Management Services	79
Tech Products, Inc.	46
Teleray	15
Televideo Systems	74-75
Teltek	15
Texas Instruments	8
Texprint	62
Tone Software Corp.	38
Tri-Data	16
Walker Interactive Products	57
Wang	23
Whitesmith LTD	62
Wicat Systems	66
Wolfe Computer Testing	66
Zilog, Inc.	20

This index is provided as an additional service. The publisher does not assume any liabilities for errors or omissions.

Computerworld Stock Trading Index



Computerworld Sales Offices

Roy Reinshofer, **Vice-President/Marketing**. Donald E. Fagan, **Vice-President/Sales**. Frank Collins, **Corporate Advertising Administrator**. Anne Hadley, **Supervisor, Display Advertising**. William J. Mills, **Manager, Classified Advertising**. Diana La Muraglia, **Manager, International Marketing Services**. **COMPUTERWORLD**, 375 Cochituate Road, Box 880, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

BOSTON SALES OFFICE: Chris Lee, *Northern Regional Manager*. Edward P. Marecki, Joseph Fitzhugh, Jim McClure, *District Managers*. Kathy Doyle, Diane Sukey, *Account Coordinators*. COMPUTERWORLD, 375 Cochituate Road, Box 880, Framingham, Mass. 01701, Phone: (617) 879-0700, Telex: 95-1153.

NEW YORK SALES OFFICE: Michael J. Masters, **Eastern Regional Manager**, Doug Cheney, Ray Corbin, **District Managers**. Fred LoSapio, **Sales Assistant**. **COMPUTERWORLD**, Paramus Plaza I, 140 Route 17 North, Paramus, N.J. 07652, Phone: (201) 967-1350.

CHICAGO SALES OFFICE: Art Kossack, Newt Barrett, **District Managers.** Marguerite Winkler, **Account Coordinator.** COMPU-
TERWORLD, 2600 South River Road, Suite 304, Des Plaines, Ill. 60018. Phone: (312) 827-4433.

LOS ANGELES SALES OFFICE: Jim Richardson, *District Manager*. Bob Hubbard, *Account Manager*. Beverly Raus, *Account Coordinator*. Eileen Dunn, *Recruitment Account Manager*. Phone: (415) 421-7330. COMPUTERWORLD, 18008 Skypark Circle, Suite 260 Irvine, Calif. 92714. Phone: (714) 556-6480.

SAN FRANCISCO SALES OFFICE: William J. Healey, *Western Regional Director*. Barry G. Milione, A.G. Germano, *Account Managers*. Ruth Gordon, *Account Coordinator*. Eileen Dunn, *Recruitment Account Manager*. COMPUTERWORLD, 300 Broadway, Suite 20, San Francisco, Calif. 94133, Phone: (415) 421-7330.

JAPAN: Mr. Shohei Kurita, COMPUTERWORLD JAPAN, 1-19-7 Shintomi, Chuo-ku, Tokyo 104, Phone: (03) 551-3882, Telex: 252-4217. Esteban H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jimbo-cho, Chiyoda-Ku, Tokyo 101, Phone: (03) 230-41178. Telex: J26860. **UNITED KINGDOM:** Bill Dunlop, Stephen Thomas, BEERE, HOBSON ASSOCIATES, 34

CW COMMUNICATIONS/INC.

Board Chairman/Publisher

Patrick J. McGovern

President

W. Walter Boyd

Senior Vice-President

Lee Vidmer

Group VP-Communication Services. Jack Edmonston. **Group VP-Circulation.** Margaret Phelan

VP-Marketing, Roy Einreinhofer. **VP-Sales**, Donald E. Fagan. **VP-Finance**, William P. Murphy.

VP-Editorial, John Whitmarsh. VP-Special Publications, Robert Ziegel.

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 880, Framingham, MA 01701

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 680, Framingham, MA 01701
Phone: (617) 879-0700. Telex: 95-1153.

SALES Vice-President, Donald E. Eagan, Corporate Advertising Administrator, Frank

SALES Vice-President, Donald E. Pagan; Corporate Advertising Administrator, Frank Collins; Display Advertising Supervisor, Anne Hadley.

Display Advertising: Tracey Eastman, Pam Valentinas, Julie Sullivan, Alice Longo

Classified Advertising Manager: William J. Mills.

PUBLICATION: *Group Vice President, Jack Edgerton, Director Research, Kathryn Dineen,*

COMMUNICATION SERVICES Group Vice-President, Jack Edmonston. **Director Research**, Kathryn Dinneen. **Sales Promotion Manager**, Norann Kimball.

SERVICES Sales Promotion Manager, Noreen Kimball.

CIRCULATION Group Vice-President, Margaret Phelan. Circulation Manager, Barbara Jeannett.

Service Rep, Peggy Kelly. **Assistant,** Carmela Priante.

PRODUCTION Production Director, Peter Holm. Production Manager, Marlene Stibal.

Supervisor, Trish Gaudette. Systems Manager, Tom Pfau.

Computerworld Stock Trading Summary

All statistics compiled
computed and formatted
by
TRADE QUOTES, INC.
Cambridge, Mass. 02139

TRADE QUOTES

E C M	F C M	PRICE					E C M	F C M	PRICE				
		1982-83 RANGE (1)	CLOSE JAN 19 1983	WEEK NET CHANGE	WEEK NET CHANGE	1982-83 RANGE (1)			CLOSE JAN 19 1983	WEEK NET CHANGE	WEEK NET CHANGE		
SOFTWARE & EDP SERVICES													
		O ADVANCED COMP TECH	1-6	6 1/2	0	0.0			A COMPUTER CONSULT	15-22	41	+3 1/4	+1.8
		O ADVANCED SYSTEMS INC	9-22	22	+2 3/4	+14.2			C INFORMATION DEVICES INC	4-21	2 1/2	+7/8	+0.5
		O ADS COMPUTER INC	7-17	18	+1/2	+3.2			C COMPUTER TRANSCIVER	4-6	3 1/4	+1/8	+1.6
		N AMERICAN INC	8-2	2 1/8	+10.8	+1.4			N COMPUTERIZATION CORP	10-38	32 1/2	+4 1/8	+14.2
		O ANALYSTS INTL CORP	5-9	8	0	0.0			C CONRAD CORP	21-38	32	+7/8	+0.5
		O APPLIED DATA RES	18-23	23 1/4	+3 1/2	+8.8			A DATA ACCESS SYSTEMS	2-5	5 1/4	+1/4	+20.9
		O ASK COMPUTER SYSTEMS	12-27	23 1/2	-7/8	-3.3			C DATA PRODUCTS INC	18-38	38 1/8	+1 1/4	+1.4
		B ABSTRACTIVE CORP IND	1-5	3 3/4	+7/8	+30.4			A DATACORP CORP	5-11	11 1/4	+1 1/8	+10.8
		O AUTOMATIC DATA PROC	10-36	36	-1 1/2	-4.1			O DATUM INC	2-7	7 1/4	+3/8	+0.7
		O CSA COMPUTER ASSOC	5-10	9 3/4	0	0.0			C DATA REVISION LAB'L	2-7	7 1/4	+1/8	+0.2
		O COMPUTER ASSOC INT'L	12-30	30	+1/2	+1.3			O DECISION DATA COMPUT	3-14	10 1/8	+1/2	+4.3
		O COMPUTER HORIZONS	3-10	3 1/2	+1 1/2	+13.5			O DELTA DATA SYSTEMS	1-3	3 1/8	-1/8	-5.2
		O COMPUTER NETWORK	4-10	10 1/2	+3/8	+2.2			N ELECTRONIC DATA	1-5	5 1/8	+1/4	+1.6
		N COMPUTER SCIENCES	11-20	18 1/4	+7/8	+5.0			O EVANS & SUTHERLAND	18-48	45 1/4	+1 1/4	+2.8
		O COMPUTER TASK GROUP	8-18	15 1/2	-1 1/4	-7.3			O GANDOLF TECHNOLOGIES	10-22	15	-1 1/4	-7.6
		O COMPUTER USAGE	2-8	3 1/4	+1 1/4	+4.0			N DATA COMM INC	5-11	17 3/4	+1 1/4	+4.5
		O COMPUTONE SYSTEMS	10-20	27	+1 1/4	+0.8			O GENERAL TITANAL CP	0-4	5 1/8	-1/8	-10.6
		O COMSERIES CORP	10-18	18 1/2	+1 1/4	+7.3			O GREAT SOUTHWEST INC	2-8	3 1/2	+1/2	+16.8
		O COMSHARE	6-10	10	+2 1/8	+30.9			N HADELITE CORP	22-40	34 1/4	+1	+2.5
		N CULLINAN DATABASE	12-33	33 1/4	+1/2	+16.5			O ICDT CORP	4-8	8	+1	+14.2
		O CYCARE SYSTEMS INC	0-18	15	+3/4	+5.2			O INFORMATION INTL INC	10-20	18 1/2	+3 1/2	+6.1
		O DATA DIMENSIONS INC	1-3	1 1/4	0	0.0			O INTEL CORP	21-46	45 7/8	+1 1/8	+7.3
		O DATABASE	0-4	0 1/2	0	0.0			N IPI SYSTEMS INC	5-9	9 1/2	+1/4	+4.0
		O DIATRON CORP	2-4	3	0	0.0			A LUNDY ELECTRONICS	7-14	13 1/2	+3/4	+5.8
		N ELECTRONIC DATA SYST	19-50	47 1/2	+5/8	+1.3			O MSI DATA CORP	14-26	26 1/8	+5/8	+1.7
		O INFORMATICS INC	10-20	20 3/4	+3 1/4	+3.7			N NETWORK SYSTEMS CORP	24-40	32 1/8	-5/8	-1.6
		O INSITE CORP	2-18	1 1/8	-5/8	-3.3			O ONE	3-6	6	0	0.0
		O IPS COMPUTER MARKET	1-2	1 1/8	0	0.0			N PARADIGM CORP	24-50	43	+2 5/8	+8.5
		O KEANE ASSOCIATES INC	4-12	12	+1/2	+0.5			O PERKIN-ELMER	17-33	32 1/8	+1 1/2	+6.4
		A LECOLCO	12-30	30 1/4	+1 1/4	+4.3			O RAMEX CORP	12-20	10 3/4	+1	+0.8
		O MGT SCI ARMR INC	8-28	27 3/4	+4	+16.8			N RECOGNITION EQUIP	4-12	11 1/2	+1 1/8	+1.1
		O MATHEMATICAL INC	9-12	11 1/2	+1 1/4	+4.3			O SCAN DATA	10-20	20 3/4	+1 1/2	+6.4
		O MATHEMATICAL APP GRP	12-19	19	+3	+18.7			A STORAGE TECHNOLOGY	16-40	22 5/8	-1 1/8	-0.5
		O MEDICAL DATA INC	12-19	19 1/2	+5/8	+1.3			O STOKES DATATRONICS	6-34	14 1/8	+2 3/8	+20.2
		O PANORPHIC SYSTEMS	8-21	21	+2	+10.5			N SYDEX INC	16-41	41 1/4	+3 1/4	+17.5
		N PLANNING RESEARCH	6-13	12 3/4	+1 3/4	+15.9			A TEC INC	4-12	5 1/4	0	0.0
		O PROGRAMMING & SYS	1-11	11 1/4	+3	+14.3			N TETRONIX INC	34-85	64 3/4	+2 1/4	+3.5
		O REYNOLDS & REYNOLD	17-38	35 1/4	+1 1/2	+4.4			N TRAC INC	24-58	52	+2 1/2	+1.8
		O SEI CORP	21-45	42 1/4	+1 1/4	+0.5			O TETADATA SYSTEMS CP	3-10	8 5/8	+3/8	+18.5
		O SHARER MEDICAL SYS	28-95	95 1/2	+3	+1.4			A IMPLEX INC	7-23	21 3/4	-1/2	-2.2
		O SCIENTIFIC COMPUTERS	6-13	11 1/4	+1 1/4	+2.2			O VISUAL TF. MODOLOGY	19-18	18 3/4	+3	+19.0
		O SOFTWARE AG	5-17	10 1/2	+3/8	+0.8			O WILTEK INC	0-1	3 1 7/8	0	0.0
		N TYNHAME INC	12-30	22 3/8	+1 7/8	+9.1							
		A URG CORP	10-18	18	+1 1/8	+6.6							
		N WRLY CORP	7-13	11	+1 1/4	+12.8							
PERIPHERALS & CURSIVESTS													
		N AN INTERNATIONAL	1-15	2 1/2	0	0.0			N AMERICAN BUS PRODS	11-19	18 7/8	+1 1/2	+2.7
		O ANDERSON JACOBSON	9-26	22 3/8	-1	-4.2			A PARADIGM BUS FORMS	11-19	1 1/4	0	0.0
		O AUTO-TROL TECHNOLOGY	8-19	15 3/4	-3/4	-4.5			N FARAWY HPDONT	12-22	20 3/8	+1 1/8	+0.6
		O BANCATE INC	7-23	23 1/4	+1 1/4	+4.4			C CYBERNETIC INC	12-20	18 7/8	0	0.0
		A BEEVITE INT'L	4-10	10 1/4	+1 3/8	+15.4			C BUS/EX PRODUCTS INC	12-20	18	-3/8	-0.8
		A BOLT-BERANEK & NEW	0-34	33 1/2	+1 7/8	+5.8			N ENRIG BUS FORMS	16-30	25 1/2	+1 1/2	+2.0
		O BOWEN CORP	2-18	18	0	0.0			N GARY COMPANY	9-19	19 1/4	+1 1/4	+5.7
		N CENTRONICS DATA CORP	8-17	13 7/8	+7/8	+6.7			N HOUFF CORP LTD	36-44	42 3/8	-1	-0.3
		A CETEC CORP	4-7	6 3/8	+1 1/4	+4.0			N HUBBARD CORP	9-19	11 3/8	+1 1/4	+2.2
		O COORDINATICS	2-11	11 1/8	+1	+1.8			O STANWOLD REGISTER	2-26	26	0	0.0
		O COMPUTER COMMUN.	1-2	3/4	0	0.0			A TAB PRODUCTS CO	12-29	27 7/8	-3/4	-0.5
									N WALLACE BUS FORMS	22-50	49 1/4	+1 3/4	+3.8
LEADING COMPANIES													
		O BODITH FINANCIAL CP	22-30	28 3/4	-3/4	-2.5							
		N LORPDIS INC	13-44	43 3/4	+3 1/4	+9.3							
		O COMENCE GROUP CORP	1-1	1/4	0	0.0							
		O COMPUTER INVESTS GRP	2-3	2 3/8	0	0.0							
		O CONFIDENTIAL INFO SYS	5-20	17	+2 1/2	+17.2							
		N DPF INC	5-13	9 5/8	+5/8	+6.9							
		A ITC INC	1-1	1	0	0.0							
		O LEASPCAP CORP	1-2	2	1/8	0	0.0						
		N U.S. LEASING	18-38	38 1/4	+1 1/4	+3.3							
SUPPLIES & ACCESSORIES													
PERIPHERALS & CURSIVESTS													
		N AN INTERNATIONAL	1-15	2 1/2	0	0.0			N AMERICAN BUS PRODS	11-19	18 7/8	+1 1/2	+2.7
		O ANDERSON JACOBSON	9-26	22 3/8	-1	-4.2			A PARADIGM BUS FORMS	11-19	1 1/4	0	0.0
		O AUTO-TROL TECHNOLOGY	8-19	15 3/4	-3/4	-4.5			N FARAWY HPDONT	12-22	20 3/8	+1 1/8	+0.6
		O BANCATE INC	7-23	23 1/4	+1 1/4	+4.4			C CYBERNETIC INC	12-20	18 7/8	0	0.0
		A BEEVITE INT'L	4-10	10 1/4	+1 3/8	+15.4			C BUS/EX PRODUCTS INC	12-20	18	-3/8	-0.8
		A BOLT-BERANEK & NEW	0-34	33 1/2	+1 7/8	+5.8			N ENRIG BUS FORMS	16-30	25 1/2	+1 1/2	+2.0
		O BOWEN CORP	2-18	18	0	0.0			N GARY COMPANY	9-19	19 1/4	+1 1/4	+5.7
		N CENTRONICS DATA CORP	8-17	13 7/8	+7/8	+6.7			N HOUFF CORP LTD	36-44	42 3/8	-1	-0.3
		A CETEC CORP	4-7	6 3/8	+1 1/4	+4.0			N HUBBARD CORP	9-19	11 3/8	+1 1/4	+2.2
		O COORDINATICS	2-11	11 1/8	+1	+1.8			O STANWOLD REGISTER	2-26	26	0	0.0
		O COMPUTER COMMUN.	1-2	3/4	0	0.0			A TAB PRODUCTS CO	12-29	27 7/8	-3/4	-0.5
									N WALLACE BUS FORMS	22-50	49 1/4	+1 3/4	+3.8
LEADING COMPANIES													
		O BODITH FINANCIAL CP	22-30	28 3/4	-3/4	-2.5							
		N LORPDIS INC	13-44	43 3/4	+3 1/4	+9.3							
		O COMENCE GROUP CORP	1-1	1/4	0	0.0							
		O COMPUTER INVESTS GRP	2-3	2 3/8	0	0.0							
		O CONFIDENTIAL INFO SYS	5-20	17	+2 1/2	+17.2							
		N DPF INC	5-13	9 5/8	+5/8	+6.9							
		A ITC INC	1-1	1	0	0.0							
		O LEASPCAP CORP	1-2	2	1/8	0	0.0						
		N U.S. LEASING	18-38	38 1/4	+1 1/4	+3.3							
SUPPLIES & ACCESSORIES													

EXCH: N=NEW YORK; A=AMERICAN; P=PHILADELPHIA; B=BOSTON; L=LOS ANGELES; M=MIDWEST; O=OVERSEAS; C=CANADA; D=DALLAS; E=EDINBURGH; F=FRANKFURT; G=GENEVA; H=HONG KONG; I=INTERCONTINENTAL; J=JAPAN; K=KANSAS CITY; L=LOS ANGELES; M=MIDWEST; N=NEW YORK; O=OVERSEAS; P=PHILADELPHIA; Q=QUEBEC; R=RENO; S=SEATTLE; T=TORONTO; U=UNION CITY; V=VANCOUVER; W=WASHINGTON; X=XENON; Y=YOKOHAMA; Z=ZURICH

Q-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID (1) TO NEAREST DOLLAR

Read how MSA has already solved your 6 toughest software problems...and relax



At MSA, we specialize in ready-to-install applications systems designed to solve real-world problems—now and into the future.

We offer a complete line of financial, cash management, human resource, and manufacturing applications. And the total software support to keep those systems up-to-date.

Here are six important areas where the right software—and The Software Company—can help.

1. Meeting the demand for management information

For many DP shops, backlogged requests for management reports can cause delays and decrease productivity.

MSA applications provide user-friendly reporting features that can often solve this problem.

With MSA systems, accountants and financial managers can produce reports without tying up data processing personnel.

The Custom Reporting feature of the MSA General Ledger System gives accounting people complete control of financial reporting functions. With this feature, they're able to design, build, and produce their own reports. Quickly and without programmer assistance.

Online capabilities such as

EASY-SCREEN™ and EASY-AUDIT™ let accountants design their own screens. Other MSA products give end-users direct access to powerful forecasting and modeling capabilities.

MSA applications help free your data processing staff from routine reporting functions. And increase your overall productivity.

2. The search for integrated systems

MSA is the only software supplier that offers a complete line of integrated business applications.

System interfaces are provided for all MSA applications. These pathways automatically channel information between systems.

By combining MSA systems, you dramatically reduce manual entry operations. And redundant data storage is eliminated.

Most importantly, your integrated MSA applications function interactively to support high-level decision-making.

3. Keeping software up-to-date

Software maintenance costs can amount to more than fifty percent of your total data processing budget.

But with your MSA application package, you get a full year of support services at no charge. (After that, you can take advantage of our surprisingly affordable support options).

Our customer support organization is the largest in the industry.

We keep track of government regulations, accounting and personnel procedures, and new data processing techniques.

And when new developments affect your system, we provide up-date bulletins promptly.

We also respond to customer needs and suggestions with timely enhancements and new releases for your system.

At MSA, we keep you and your systems up-to-date.

4. Training your people

The MSA Customer Education Program is the most thorough in the industry.

In 1982, for example, we are conducting more than 90,000 student-hours of training.

A broad selection of courses are available, ranging from advanced training for data processing personnel to basic system orientation for end-users.

Workbooks and audio cassettes are also available for on-site training.

5. Reducing implementation time

MSA Implementation

Teams have installed more than 7400 software systems worldwide. And we put that experience to work for you beginning with the very first meeting.

We help you work out an implementation schedule that tells you what will happen, when it will happen, and who will be responsible.

Your system is installed by specialists who are experienced with the type of computer hardware your company uses. And they work with you until the system is installed, tested, and operating smoothly.

We even help you handle important details like new business forms, including new check stock, invoices, and so on.

6. What about microcomputers?

For many office productivity and business applications, microcomputers are a practical adjunct to mainframe computing.

Through our Peachtree Software™ Division, MSA can help you co-ordinate your organization's mi-

crocomputer software requirements.

You can choose from a full line of comprehensive, yet easy-to-use business applications.

Peachtree's office productivity



MSA systems let accountants generate their own financial reports.

software products offer an impressive array of functions that include: electronic mail, spreadsheet analysis, word processing, and even a system that checks your spelling.

Talk to The Software Company

We'd like to tell you more about how our systems can give you ready-to-install solutions.

For more information on MSA systems, please contact Robert Carpenter at (404) 239-2000. Or clip this coupon.

Management Science America, Inc.
3445 Peachtree Road, N.E.
Atlanta, Georgia 30326

Please send me free, detailed information on MSA, The Software Company. I'm particularly interested in:

Mainframe Applications Software:
☐ Financial Systems, ☐ Cash Management Systems, ☐ Human Resource Systems, ☐ Manufacturing Control Systems (MRP II)

Peachtree Microcomputer Software:
☐ Office Productivity Systems,
☐ Business Application Systems

Computer Type/Model _____

Name _____

Title _____

Company _____

Address _____

City _____

State _____

Zip _____

Business Phone () _____

CW9a2(1/24/83)

MSA
The Software Company

